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Gap Analysis Comparing LLNL ISMS and ISO 14001

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Disclaimer

REPORT SUMMARY

A gap analysis was conducted comparing the Lawrence Livermore National Laboratory (LLNL) Integrated Safety Management System (ISMS) with the international standard ISO 14001 Environmental Management System and with Department of Energy (DOE) Order 450.1. This analysis was accomplished as part of LLNL's assessment of the impacts of adopting DOE Order 450.1 and comprises a portion of its continuous improvement efforts under ISMS.

Purpose of analysis was to determine if the LLNL ISMS has the requisite EMS elements and procedures sufficiently implemented to:

- adhere to or be compatible with ISO 14001; and
- adhere to or be compatible with DOE Order 450.1.

The analysis was based on review of over 20 documents and interviews with 30 staff, representing three directorates and the Assurance Review Office. This analysis focused on the adequacy and completeness of the system and processes and not on the actual level of environmental performance.

The existing LLNL ISMS has the requisite EMS elements and procedures sufficiently implemented to adhere to ISO 14001; however, improvements throughout the ISMS will be important to ensure third party certification. Table 1 provides a summary interpretation of the results of completion of the ISO 14001 questionnaire.

Similarly, the existing LLNL ISMS has the requisite EMS elements and procedures sufficiently implemented to adhere to DOE Order 450.1; although improvements would enhance implementation.

Recommendations focus on the following:

- clarifying the environmental policy(s)
- improving the review process for policy
- documenting and communicating objectives and targets
- identifying and monitoring institutionally significant aspects versus targets

Table 1. Summary Interpretation of the ISO 14001 Questionnaire (Attachment 1).

ISO 14001 Principle	Summary Interpretation[1]
Commitment and Policy	The environmental policy meets many, but not all, of the requirements.
Planning	Most environmental aspects and legal requirements identified; some objectives and targets established, **however, much progress is still required**.
Implementation	Most, if not all, areas of responsibility have been assigned, and resources allocated. Operating and other procedures have been developed, documented and communicated. Personnel are trained in their use and in complying with their environmental responsibilities. Document controls exist to ensure that systems are kept up to date. However, **if operations and activities associated with or causing significant environmental aspects have not been identified (see Planning), implementation will not meet the terms of this standard**
Checking and Corrective Action	Many measurement and evaluation procedures are established along with some of the key elements for addressing non-conformity. Some important records are maintained, and EMS audits might be carried out. **However, much improvement is still warranted**
Management Review	**Improvement is still warranted**

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[1] Summary Interpretation language is from *ISO 14001 Environmental Management System Self-Assessment Checklist* [from Global Environmental Management Initiative (GEMI)]

INTRODUCTION AND PURPOSE

Lawrence Livermore National Laboratory (LLNL) has an existing Integrated Safety Management System (ISMS) used to ensure that Environmental Safety and Health (ES&H) is integrated into the work activities of the Laboratory. Recently the U.S. Department of Energy (DOE) approved Order 450.1 (*Environmental Protection Program*). The Order requires that an Environmental Management System (EMS) must be established and integrated into each DOE Contractor's existing ISMS.

LLNL is currently evaluating whether DOE Order 450.1 should be adopted as part of its Work Smart Standards, which are part of the University of California's contract with DOE. LLNL requested that an analysis of its existing ISMS be reviewed against the ISO 14001 standards, both as a part of this evaluation and as part of their ISMS quality assurance objective of continuous improvements. In addition, the ISMS was compared to the DOE Order 450.1 contractor requirements.

ISO 14001 BACKGROUND

ISO 14001 is an international standard for EMS and is one of the standards that other DOE facilities (e.g., Idaho National Engineering and Environmental Laboratory, Hanford Reservation, Brookhaven National Laboratory) have used to establish and implement an EMS. The standard is based on the concept that the organization will periodically review and evaluate its environmental management system in order to identify opportunities for improvement and their implementation.

Addressing environmental issues in a reactive, or ad-hoc manner has been shown to be inefficient. The implementation of an EMS based on ISO 14001 has been shown to improve environmental protection performance, regulatory performance, and mission productivity. Reducing use of resources, preventing pollution, and minimizing waste results in fewer regulatory risks, improved stakeholder trust, and less cost for materials and for waste management. Conversely, the risks posed by mismanaging environmental issues can include damage to the laboratory's reputation and a resulting loss of confidence among customers, neighbors and stakeholders, and, legal liabilities.

An EMS that follows ISO 14001 provides a structured process for continual improvement. The rate and extent of improvement is determined by the organization in light of economic and other circumstances (e.g., mission requirements, stakeholder concerns, DOE/NNSA direction). Although some improvement in environmental performance can be expected due to the adoption of a systematic approach, it should be understood that an EMS is only a tool and if used inappropriately may not enable the organization to achieve the desired level of environmental performance.

KEY ELEMENTS OF ISO 14001

ISO 14001 is one of a series of emerging international environmental management standards aimed at promoting continual improvement in company environmental performance through the adoption and implementation of an environmental management system. The standard specifies the core elements of an EMS but contains only those elements that may be objectively audited for certification or self-declaration purposes. ISO 14001 defines an overall environmental management system, closely modeled on the ISO 9000 quality systems standard, and covers the following guiding principles:

- **Establishment of an appropriate environmental policy** that is documented and communicated to employees and made available to the public, and which includes a commitment to continual improvement and pollution prevention, regulatory compliance and a framework for setting objectives;

- **A planning phase** that covers the identification of the environmental aspects of the organization's activities, identification and access to legal requirements, establishment and documentation of objectives and targets consistent with the policy, and establishment of a program for achieving said targets and objectives (including the designation of responsible individuals, necessary means and timeframes);

- **Implementation and operation of the EMS** including the definition, documentation and communication of roles and responsibilities, provision of appropriate training, assurance of adequate internal and external communication, and written management system documentation as well as appropriate document control procedures, documented procedures for operational controls, and documented and communicated emergency response procedures;

- **Checking and corrective action procedures**, including procedures for regular monitoring and measurement of key characteristics of the operations and activities, procedures for dealing with situations of non-conformity, specific record maintenance procedures and procedures for auditing the performance of the EMS;

- **Periodic management reviews of the overall EMS** to ensure its suitability, adequacy and effectiveness in light of changing circumstances.

DOE ORDER 450.1

Doe Order 450.1 was approved January 2003, replacing DOE Order 5400.1 (*General Environmental Protection Program*) and DOE Notice 450.4 (*Assignment of Responsibilities for Executive Order 13148,Greening the Government Through Leadership in Environmental Management*). DOE O 450.1 requires the establishment of an Environmental Management System (EMS) that is integrated into DOE's Integrated Safety Management System (ISMS).

The objective of DOE Order 450.1 is "To implement sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by Department of Energy (DOE) operations and by which DOE cost effectively meets or exceeds compliance with applicable environmental; public health; and resource protection laws, regulations, and DOE requirements." In addition, two DOE documents have been issued since the approval of the Order that provides discretionary guidance for implementing the requirements of the Order 450.1.

ISMS REVIEW METHODS

A gap-analysis approach was used to accomplish the review of the existing ISMS as compared with ISO 14001 and DOE Order 450.1. The analysis was accomplished mainly at an institutional level. The status of the existing ISMS was determined via review of documents describing the system and procedures that implement the system. Some work product documents were also reviewed to assess the implementation of the system. In addition, interviews were conducted to determine the status of implementation of the ISMS.

The sufficiency of the existing ISMS to meet ISO 14001 standard was evaluated by comparing information gathered from the documents and interviews against the individual elements of the standard. Three steps were taken to focus the analysis. First, an ISO 14001 questionnaire (Global Environmental Management Initiative 1996)[2] was used to guide the assessment of the ISMS information. The assessment poses 31 questions reflecting the elements of ISO 14001. Each response is assigned a score of "0", "1" or "2". A score of "0" reflects an absence of evidence that the ISMS met the element, "1" reflects evidence that some of the element is met, and "2" indicates that a given element appears to be fulfilled, although a "2" score does not preclude the possibility that improvements could still be implemented. Additional information concerning the process and the questions, scores, and comments regarding the scores are found in Attachment 1. A second tool was to link (cross-reference) portions of the ES&H Manual with each of the 36 ISO 14001 elements. Specific text statements from the ES&H Manual were extracted to provide general evidence of implementation of the element. The third step was to synthesize output from the first two steps and evaluate the ISMS in total. A summary is provided of the sufficiency of the ISMS versus five guiding principles (policy, planning, implementation, checking, management assessment) and opportunities for improvement are identified. The body of this report reflects that synthesis.

The sufficiency of the existing ISMS to meet DOE Order 450.1 requirements was evaluated by comparing information gathered from the documents and interviews against the individual elements of the order. Two steps were taken to focus the analysis. First, the DOE Order was broken down into discrete requirements. Each of the 35 DOE Order 450.1 requirements were linked (cross-referenced) to portions of the ES&H Manual. In addition, the most applicable ISO 14001 element was matched with the DOE Order

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[2] Global Environmental Management Initiative. ISO 14001 Environmental Management System Self-Assessment Checklist March 1996 (Revised November 2000).

requirement. The cross-reference is found in Attachment 2. The second step was to synthesize output from the first step and evaluate the ISMS in total versus DOE Order 450.1. A summary is provided of the sufficiency of the ISMS versus the DOE Order and opportunities for improvement are identified. The body of this report reflects that synthesis.

SUMMARY OF RESULTS

ISO 14001 Review Results

Attachments 1 and 2 contain additional information on how the ISMS matches to the ISO 14001 elements.

<u>Commitment and Policy</u>

Score from ISO 14001 Questionnaire (Attachment 1): 10 points (maximum score: 14)

Policy statements are present. There is a policy section of the ES&H Manual that appears to be a compendium of all policies. The policies have several strengths including that the policies come from senior management and have a strong commitment to regulatory compliance. They are documented and communicated using the ES&H Manual (available on the web) and through general training. However, a broad cross-section of the workforce was not interviewed and therefore, it is uncertain whether these communication vehicles are fully effective.

> **ISO 14001 Elements – Policy**
> 4.2 Top management shall define the organization's environmental policy and ensure that it
> **a is appropriate**
> **b. includes a commitment to continuous improvement**
> **c. includes a commitment to comply with relevant legislation and regulations.**
> **d. provides a framework for setting and reviewing objectives and targets.**
> **e. is documented, implemented and maintained, and communicated**
> **f. is available to the public**

There are several opportunities to improve the policy component of the ISMS (EMS). Additional policies (e.g., QA policy) exist in other locations of the ES&H Manual but are not explicitly mentioned or linked to the policy section of the manual. In addition, there is an Aviation Safety Policy listed in Document 2.1 however, that policy statement is not included in Document 1.2 of Volume I of the ES&H Manual. The compendium of policies does not explicitly include a statement on continuous improvements, although such a statement is included in the Quality Assurance document of the ES&H Manual.

During interviews with LLNL personnel, there was no evidence that the policies are reviewed on a consistent basis or that they are updated to reflect changes in mission, environment, regulatory requirements, or stakeholder concerns. As examples, many of the policies are dated in the early and mid-1990's, and the Waste Minimization (dated May 31, 1991) has goals that are no longer relevant—since the goals' durations span three to five years (i.e., 1994 to 1996). Interviews also indicate that there is a high degree

of variability in the interpretation of the policies. This variability in interpretation likely is leading to some uncertainty in identifying appropriate goals and targets for environmental performance. Several interviewees mentioned that the goal was environmental compliance. Other interviewees indicated that much of their efforts supporting environmental performance did not have a specific regulatory driver. This suggests that the policies only partially establish a framework for establishing goals and objectives.

Four actions are suggested to address the opportunities for improvement.

1. Improve the clarity and specificity of the ES&H policy to define the statements, "preserves the quality of the environment" and "environmentally sound."
2. Update and compile all environmental policies into Document 1.2 and 2.1 of Volume I of the ES&H Manual or add links to other environmental policies not included in Document 1.2 and 2.1.
3. Establish, document, and implement a process to consistently review environmental policies that considers mission/customer, regulatory, budget, and stakeholder issues, challenges, and opportunities.
4. Add language in the policy on commitment to continuous improvement and to pollution prevention.

Planning

Score from ISO 14001 Questionnaire (Attachment 1): 6 points (maximum score: 10)

The Laboratory uses the process to develop Facility Safety Plans (FSPs), Operating Safety Plans (OSPs), and Integrated Work Sheets (IWSs) to identify aspects for each individual facility and activity. The FSP, OSP, and IWS processes include aspects that reflect regulatory and other requirements that are identified through the Work Smart Standards (WSS) process. No environmental objectives or targets are identified for facilities or activities (FSPs or IWSs). The controls identified to minimize impacts to aspects (hazards) are based on regulatory compliance requirements (e.g., no discharges, emission, waste generation above permitted levels – no fines or violations).

The Laboratory has institutional level processes to identify aspects and establish objectives, which are tracked and documented (e.g., self-assessment reports, ARO assessment reports, pollution prevention reports to DOE, regulatory reports to agencies). These processes include California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) review process. The CEQA/NEPA reviews can be initiated through the FSP, OSP, and IWS processes and other mechanisms (e.g., funding and construction project reviews and approval processes). The Laboratory also has a waste minimization and pollution prevention program, which has some linkage to the facility and activity levels.

ISO 14001 Elements - Planning
4.3.1 The organization shall establish and maintain procedures **to identify environmental aspects of its activities, products or services** 4.3.2 The organization shall establish and maintain a procedure **to identify applicable legal and other requirements** 4.3.3 The organization shall **establish and maintain documented environmental objectives and targets at each relevant function and level within the organization** 4.3.4 The organization shall establish and maintain a program for achieving objectives and targets, including **a. designation of responsibility at each function and level of the organization** **b. the means and time-frame by which they are to be achieved**

The strength of the Laboratory's system is the consistent use of an IWS checklist and the implementation support by ES&H Teams. This ensures that the a priori aspect list is consistently considered and interpreted. In addition, the general maturity of the overall ISMS is a solid management platform to meet targets to achieve identified objectives.

The ISMS has all of the components of an EMS including roles, and responsibilities, means to achieve objectives, etc. However, there remain several opportunities for improvement. The process to identify environmental aspects, objectives, and targets is not as mature as the health and safety components. The ISMS focuses on the activity and facility-level aspect identification and controls. The IWS process does not have objectives and uses an a priori set of environmental aspects. The a priori set of aspects does not reflect all institutional objectives—or the environmental aspects tracked at the institutional level (e.g., water conservation and energy conservation, traffic reduction are not explicitly identified on the checklist). A mitigating factor is that frequently the same subject matter experts assist in reviews or updates of institutional objectives, improvements of the IWS process, and review of specific IWSs.

Environmental objectives and targets have been established and documented at the Directorate and Institutional levels. Most environmental targets that are of management interest are focused on regulatory compliance and therefore are threshold targets (i.e., "not to exceed"). Environmental objectives and targets are not consistently established for non-regulatory aspects (e.g., waste minimization and pollution prevention). In addition, there are no plans to replace the removed Appendix F environmental measures that served as institutional targets that were clearly reviewed by all LLNL management levels.

Four actions are suggested to address the opportunities for improvement.

1. Institute an institutional process to identify and consolidate environmental objectives and targets (replace appendix F process internally).
2. Identify objectives and targets for non-regulatory objectives to meet policy goals.
3. Expand IWS process to include all significant aspects. Also consider reviewing activities that are not commonly performed by the public.
4. Ensure consistency between activity/facility and institutional aspects, objectives, and targets.

Implementation and Operation

Score from ISO 14001 Questionnaire (Attachment 1): 23 points (maximum score: 26)

The ISMS has a mature and complete system to implement an EMS. The system is well defined in the ISMS Description and the ES&H Manual. Roles and responsibilities are clearly defined and documented and the ES&H Working Group track institutional environmental objectives and reports to senior management.

ISO 14001 Elements - Implementation

4.4.1 Roles and responsibilities shall be defined, documented, and communicated, including
a. a specific management representative who has authority for the environmental management system
b, a specific management representative who reports to top management on the performance of the environmental management system.

4.4.2 The organization shall identify training needs and require that personnel receive appropriate training, including
a. knowledge of environmental policy and the environmental management system
b. understanding of environmental aspects of work and the importance of improved performance
c. individual roles and responsibilities and emergency preparedness and response
d. potential consequences of departure from specified operating procedures

4.4.3 The organization shall establish and maintain procedures for
a. internal communication regarding the environmental management system
b. receiving, documenting, and responding to communication from external interested parties regarding environmental issues

4.4.4 The organization shall establish and maintain information to
a. describe the environmental management system
b. provide direction to related documentation

4.4.5 The organization shall establish and maintain procedures for controlling documents to ensure that
a. they can be located
b. they are periodically reviewed, revised, and approved
c. current versions of the documents are available at all locations
d. obsolete documents are promptly removed from use
e. any obsolete documents retained for legal or other reasons are suitably identified

4.4.6 The organization shall identify operations and activities associated with significant aspects and shall
a. establish and maintain documented procedures
b. stipulate operating criteria in the procedures
c. establish and maintain related procedures and requirements for suppliers and contractors

4.4.7 The organization shall establish and maintain **procedures for accidents and emergency situations**

The ISMS (EMS) is documented and available to the workforce. The CIO and ISMS Description Manager ensure that the document and its availability continue to be improved. A training system is in place and recent assessments and corrective actions continue to improve the system and its use by workers and managers. Training is based on general institutional requirements and custom requirements identified as activities and facility work is planned. The quality assurance section and the recent configuration management section of the ES&H Manual provide document and records management procedures. These procedures are further elaborated at the Directorate level at a minimum. The development of FSPs, OSPs and IWSs ensure mission work has appropriate controls established for operations. Many environmental requirements are passed to suppliers and contractors.

There are two opportunities for improvement. The supplier and construction processes include only a subset of environmental aspects that the Laboratory has identified for their activities. The

controlled item/services list does not include many replacement or recyclable products that are identified by waste minimization and pollution prevention specialists. Similarly, LEED design requirements are not consistently included in facility construction. Discussions are occurring with the aim of potentially improving both systems.

Two actions are suggested to address the opportunities for improvement.

1. Expand the supplier and construction and other subcontract requirement processes to cover all aspects and objectives with identified targets.
2. Review and modify system depending on changes to policy and planning elements of the ISMS (EMS).

Checking and Corrective Action

Score from ISO 14001 Questionnaire (Attachment 1): 7 points (maximum score: 10)

The ISMS and ES&H Manual include programs and procedures for monitoring, handling non-conformance, records management, and periodic self-assessments. Environmental components of the ISMS are included in all of these programs and procedures. In general, the program is mature and reflects that health and safety are the dominant aspects.

Environmental monitoring is primarily at the institutional level for regulatory and permit requirements (identified through development of IWSs, OSPs, and FSPs). LLNL also has several other institutional processes including the Site-Wide EIS, Pollution Prevention reports to DOE, Comprehensive Energy Management plan activities, and the Site Annual Environmental Report (SAER). Procedures are documented and are reviewed regularly. The process also identifies and considers emerging new requirements and regulations. Monitoring reports are submitted on a documented schedule to DOE, regulatory agencies, and management depending on the purpose of the monitoring and requirements. Permit, compliance, and other regulatory process records are identified, maintained, and can be retrieved. Similarly Site Annual Environmental Report data and records are maintained.

ISO 14001 Elements – Checking
4.5.1 The organization shall establish and maintain documented procedures to monitor and measure the key characteristics of its operations
4.5.2 The organization shall establish and maintain procedures for defining responsibility and authority for investigating and mitigating nonconformance
4.5.3 The organization shall establish and maintain procedures for the identification, maintenance, and disposition of environmental records
4.5.4.a The organization shall **a. establish and maintain programs/ procedures for periodic environmental management system audits. b provide information on the results of audits to management**

Non-conformance investigation procedures are established and are reviewed and updated annually (at a minimum). Operating procedures are updated to reflect lessons-learned based on findings (e.g., SEP 2002 Self Assessment Report identified the IWSs and FSPs that were modified).

ISMS self-assessments are conducted at several levels of the

organization. Assurance Review Office conducts environmental assessments such as air compliance monitoring. Directorates also conduct self-assessments (e.g., SEP 2002 report and 2004 plan).

The LLNL system reflects the dichotomy between activity-based assessment and action versus institutional review and reporting. The opportunities for improvement are focused on merging these components. The monitoring and reporting mechanisms at the activity/facility level and the institutional level are not fully integrated. As an example, the aspects considered for activities in IWSs do not include aspects identified in the some institutional processes (e.g., energy conservation, use of "environmentally-friendly" materials, etc.). There is not a process to efficiently use IWS review information as an indicator of institutional success in environmental management. In addition, some aspects (e.g., traffic) are not considered. Many times there are no targets unless mandated by regulation, against which to compare the monitoring information. Therefore, compliance thresholds are the primary targets. Cumulative effects are considered only in NEPA EISs and EAs but are not used either as leading or lagging indicators. The non-conformance investigations (e.g., lessons-learned and assessments) focus on health and safety while there is little reporting on environmental aspects and impacts except for regulatory compliance.

Four actions are suggested to address the opportunities for improvement.

1. Modify the monitoring process to assess an appropriate range of aspects that reflect the environmental policy and objectives and targets.
2. Modify the monitoring process to assess an appropriate range of aspects against specified targets
3. Develop a process that integrates monitoring and data from IWSs and FSPs with site wide monitoring programs (e.g., Site Annual Environmental Report, Pollution Prevention Reports, Energy and water conservation reports, and Site-Wide EIS) to monitor environmental performance.
4. Expand use of lessons-learned process to consistently improve environmental performance and the ISMS/EMS.

Management Review and Improvement

Score from ISO 14001 Questionnaire (Attachment 1): 1 points (maximum score: 2)

Management reviews the ISMS (EMS) annually and documents the reviews. The Assurance Review Office *LLNL NESHAPs Program Assessment* (2003) and the FY2004 *ARO Environmental Assessment Plan* focus on the management system for radiological and non-radiological air emission compliance, respectively. Additionally, top management receives information of independent audits (e.g., regulatory agency and DOE) and is engaged on responding to them.

ISO 14001 Elements – Management Review
4.6 The organization's top management shall, at intervals, review the environmental management system

The SEP *Annual Self Assessment Report* for 2002 and *Self Assessment Plan for 2004* are examples at the directorate level of top management reviews of the system. The SEP 2002 report included seven environmental areas of 19 areas that were tracked for corrective action. The environmental areas included NEPA, pollution prevention, air, two water, and two waste aspects. The SEP 2004 plan identifies 24 self-assessment areas. Only four of these areas were specific to environmental aspects (waste, tanks, SWPP, and SPCCP), and these four were focused on whether they met regulatory requirements. The Laboratory system is mature and consistently is implemented, with resulting corrective actions tracked and accomplished.

There are several opportunities for improvement to the system. Reviews are heavily focused on compliance with limited measures on non-regulated environmental performance. Also, there are not necessarily targets for environmental objectives (e.g., waste generated). There are currently no plans to establish internal institutional metrics to replace Appendix F measures that were removed from the contract. The Appendix F measures, while primarily compliance focused, was a primary top management assessment system that reflected Laboratory's environmental performance (al beit compliance driven). In addition, top management may not consistently review and act on other EMS reports such as pollution prevention, energy conservation reports, and the Site Annual Environmental Surveillance Report.

Three opportunities for improvement are suggested.

1. Modify reviews to assess an appropriate range of aspects that reflect the environmental policy and objectives.
2. Establish consistent targets to meet objectives.
3. Use the Site Annual Environmental Report, Pollution Prevention Reports, Energy and water conservation reports, and NEPA reviews to track environmental performance.

DOE Order 450.1 Review Summary

The requirements of DOE Order 450.1 can be organized into eight groupings that relate to the existing ISMS and ISO 14001. Below is a summary of the eight groupings of the DOE Order 450.1 requirements and how the ISMS fulfills the requirements. Attachment 3 identifies the ES&H Manual and ISMS components that implement each requirement of DOE Order 450.1.

Overall System and Adoption of DOE Order 450.1

DOE Order 450.1 Requirements

1) Responsible for (1) compliance with the requirements of the CRD and

2) Responsible for (2) flowing down the requirements of the CRD to subcontracts at any tier to the extent necessary to ensure the contractors' compliance with the requirements.

3) EMS requirements must be addressed in the contractor's ISMS which must be submitted for DOE review and approval

4) Provide for the systematic planning, integrated execution, and evaluation of programs for— public health and environmental protection,

6) Provide for the systematic planning, integrated execution, and evaluation of programs for—compliance with applicable environmental protection requirements.

7) Include policies, procedures, and training to identify activities with significant environmental impacts, to manage, control, and mitigate the impacts of these activities, and to assess performance and implement corrective actions where needed.

8) Include measurable environmental goals, objectives, and targets that are reviewed annually and updated when appropriate.

18) Update approved ISMS descriptions as necessary to include EMS requirements of this CRD. Report to DOE operations/ field/site office managers within 12 months after insertion of this CRD into the contract on the status of implementation of appropriate management system elements of this CRD.

22) " Executive Order 13148, "Greening the Government Through Leadership in Environmental Management

Six requirements (# 1, 4, 6, 7, 8, and 22) focus on a system for environmental protection and three requirements (#2, 3, and 18) relate to adoption of DOE Order 450.1. The current LLNL ISMS (EMS) appears to meet the general system requirements. As discussed in the Planning section of the ISO 14001 evaluation above, improvements in developing a broader set of objectives and a more complete set of targets may be appropriate depending on aspects and policy reviews.

Modification to the ISMS would be needed for the other three requirements if the Laboratory decides to adopt DOE Order 450.1. The modification would be to add statements adopting the Order in the ISMS Description and the ES&H Manual. Also, language likely would need to be added in subcontracts and the processes. [Note: Additional changes would be related to the other DOE Order requirements.]

Natural Resource Aspects

DOE Order 450.1 Requirements

Consider the following for inclusion as applicable:
9) conformity of DOE proposed actions with State Implementation Plans to attain and maintain national ambient air quality standards,
10) implementation of a watershed approach for surface water protection
11) implementation of a site-wide approach for groundwater protection,
12) protection of other natural resources including biota,
13) protection of site resources from wildland and operational fires, and
14) protection of cultural resources and

15) promote the long-term stewardship of a site's natural and cultural resources throughout its operational, closure, and post-closure life cycle; - modify section(s) – add natural resource stewardship component to ES&H Manual

25) Incorporate, where appropriate, environmentally and economically beneficial landscape practices into all new landscaping programs, policies, and practices for facilities. [See requirements placed on Federal agencies in Executive Order 13148, "Greening the Government Through Leadership in Environmental Management."]

Eight DOE Order 450.1 requirements address natural resources including air (#9), water (#10, 11) biota (#12), cultural resources (#14), and mixed resources (#13, 25). The current ISMS includes processes for each requirement except for the beneficial landscaping requirement (#25). Plant Engineering has some processes for landscaping; although they were not reviewed to determine suitability to fulfill the DOE Order requirement. Similarly, the fire management plan for Site 300 is not part of the ES&H Manual. The ISMS processes for surface water are oriented toward facilities and activities; therefore, LLNL may need to evaluate a watershed approach. The ISMS processes for biota and cultural resources are focused toward project compliance and may be ripe for review to ensure all significant aspects are incorporated into the ISMS and to fulfill the DOE Order requirements.

Replacement of Ozone Depleting Substances

DOE Order 450.1 Requirements

16) reduce or eliminate the generation of waste, the release of pollutants to the environment, and the use of Class I ozone-depleting substances (ODS) through source reduction, re-use, segregation, and recycling, and by procuring recycled content materials and environmentally preferable products and services;

Develop and implement a program and procedures to maximize the use of safe alternatives to ODS whereby
33) a) the procurement of Class I ODS for all nonexcepted uses is discontinued by December 31, 2010 [See Executive Order 13148]
34) b) disposal of ODS removed or reclaimed from equipment (including disposal as part of a contract, trade, or donation) is coordinated within DOE and with DoD, and for situations in which the recovered ODS is a critical requirement for DoD missions, the facility transfers the ODS to DoD

Three DOE Order requirements are focused on Ozone Depleting Substances (ODS). The ISMS includes consideration of ODS in the IWS. Other Laboratory processes not explicitly linked to the ES&H Manual or the ISMS address procurement of alternatives to ODS and disposal of ODS. It may be appropriate to have a link between the ISMS (ES&H Manual) and these other processes to further demonstrate that the processes are part of the EMS.

Air and Water Permit Monitoring and Site Annual Environmental Report

DOE Order 450.1 Requirements
17) ensure the early identification of, and appropriate response to, potential adverse environmental impacts associated with DOE operations, including as appropriate, preoperational characterization and assessment; and effluent and surveillance monitoring. 29) 10. Conduct environmental monitoring, as appropriate, to support the site's ISMSs, to detect and characterize releases from DOE activities; assess impacts; estimate the dispersal patterns in the environment; characterize the pathways of exposure to members of the public; and characterize the exposures and doses to individuals, and to the population; and to evaluate the potential impacts to the biota in the vicinity of the DOE activity

Two DOE Order 450.1 requirements pertain to air and water monitoring and potential impacts. One requirement (#17) is handled under the ISMS through the air and water monitoring activities described in Volume III of the ES&H Manual. Monitoring to determine impacts to humans and biota is accomplished through the preparation of the Site Annual Environmental Report (SAER). Both processes appear to fulfill the Order requirements.

Comprehensive Energy Management Plan And Fleet Efficiency

DOE Order 450.1 Requirements
20) " Executive Order 13221, "Energy Efficiency Standby Power Devices;" 21) Executive Order 13123, "Greening the Government Through Efficient Energy Management 23) and Executive Order 13149, "Greening the Government Through Federal Fleet and Transportation Efficiency."

Three DOE Order 450.1 requirements are related to energy management, including transportation efficiency. The Comprehensive Energy Management Plan covers two of the requirements, while fleet procedures likely cover the Order's transportation requirement.

Quality Assurance

DOE Order 450.1 Requirements
30) Ensure the analytical work supporting environmental monitoring is implemented using— (a) a consistent system for collecting, assessing, and documenting environmental data of known and documented quality; 31) (b) a validated and consistent approach for sampling and analysis of radionuclide samples to ensure laboratory data meets program-specific needs and requirements within the framework of a performance-based approach for analytical laboratory work; 32) (c) an integrated sampling approach to avoid duplicative data collection.

Three DOE Order 450.1 requirements are related to quality assurance. Volume IV of the ES&H Manual describes the general quality and configuration management requirements and processes for the ISMS (EMS). Mores specific quality assurance procedures are in place for the organizations that conduct environmental monitoring of air, water, soil, and biota and likely fulfill the DOE Order requirements.

Emergency Planning

DOE Order 450.1 Requirements
35) 13. Assist the Department with its requirement under Executive Order 13148 by meeting reporting and planning requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA or Title III of Superfund Amendments and Reauthorization Act of 1986), 42 U.S.C. 11001, and the Pollution Prevention Act of 1990, 42 U.S.C. 13101.

There is one requirement specific to emergency planning. The existing processes implemented at LLNL likely fulfill this requirement. It is part of Volume II of the ES&H Manual.

Pollution Prevention

DOE Order 450.1 Requirements
5) Provide for the systematic planning, integrated execution, and evaluation of programs for—pollution prevention (P2).
19) Executive Order 13101, "Greening the Government Through Waste Prevention, Recycling and Federal Acquisition
24) Assist the Department in meeting its requirements under Executive Order 13148 by ensuring, where appropriate, implementation of centralized procurement and distribution programs (e.g., pharmacy) for purchasing, tracking, distributing, and managing materials with toxic or hazardous content at facilities under their purview.
26) Monitor progress toward meeting the P2 requirements of paragraph 2c above, and make such information available annually to the DOE operations/field/site office.
27) Consider P2 in the specification and acquisition of supplies to cost effectively maximize procurement of environmentally preferable products. As appropriate, all acquisitions must be coordinated with the DOE operations/field/site office "Green Acquisition Advocate." [See Acquisition Letter AL-2000-03, dated 05/16/00]
28) 9. Conduct operational assessments, such as Pollution Prevention Opportunity Assessments, of site operations to identify opportunities for source reduction, material segregation, recycle/reuse, or other P2 projects. Based on the results of these assessments, implement cost-effective P2 projects, using life-cycle assessment concepts and practices in determining return-on-investment.

There are six DOE Order 450.1 requirements specific to pollution prevention. As discussed in the review of ISO 14001 elements, pollution prevention is included in the ISMS (Volume III of the ES&H Manual). However, improvements in how requirements are incorporated into subcontracts, purchasing, and in execution of work are needed to ensure fulfillment of the DOE Order.

CONCLUSIONS

LLNL ISMS (implemented primarily through the ES&H Manual) has all the basic components of an EMS to meet the standards of ISO 14001. However, several opportunities for improvement would greatly improve the EMS component of the ISMS and increase environmental performance. These improvements may be needed to achieve third-party certification.

Primary is the review and modification of policy to reflect the mission, all significant environmental aspects, and other considerations (e.g., economic, customer, stakeholders interests). This should include consideration of aspects identified in DOE Order 450.1 that may not be explicitly included in the ISMS (e.g., watershed approach to water resource management, wildfire management). The process used to review policy should be documented and be used as the basis for periodic review and modification of policy.

The second recommended action is to develop a complete institutional list of significant aspects. This could be accomplished using existing processes including:

1. Previous Appendix F environmental aspects, objectives, and targets
2. On-going preparation of the five-year update of the Site-Wide EIS and other NEPA documents
3. Site Annual Environmental Report
4. Comprehensive Energy Management Plan development
5. Institutional pollution prevention and waste management planning
6. Data generated through the development, review, and implementation of the IWSs

The first five processes consider the institution as a whole. The sixth process identifies aspects from the activity level. By combining these five separate processes, a consistent basis could be developed to establish objectives and targets consistently at the institutional through activity level.

The third suggested action is to develop specific targets that address each significant aspect. In addition existing processes that establish objectives for environmental aspects should be part of the ES&H Manual or linked to the Manual. Examples include the Comprehensive Energy Management Plan, the Site Annual Environmental Report, the Site 300 Fire Management Plan, etc.

The remaining actions identified in the results summary are related to modifying the ISMS (EMS) to reflect the changes from the above three recommendations.

ATTACHMENTS

ISO 14001 Questionnaire with scores and comments
Cross-walk of ES&H Manual to ISO 14001 elements
Cross-walk of ES&H Manual to DOE Order 450.1 requirements

Interviewees

1. Safety and Environmental Protection (SEP) Directorate Assurance Manager
2. CIO, Training, and ES&H Information Management, SEP
3. Staff, CIO, Training, and ES&H Information Management, SEP
4. Assurance Manager, Environmental Protection Department
5. Division Leader, Operations and Regulatory Affairs Division
6. Group Leader, Environmental Evaluations Group
7. Group Leader, Water Guidance & Monitoring Group
8. Terrestrial & Atmospheric Monitoring & Modeling Group Leader
9. Acting Group Leader, Permits and Regulatory Affairs Group
10. Contractor Staff, Permits and Regulatory Affairs Group
11. Staff, Permits and Regulatory Affairs Group
12. Staff, Permits and Regulatory Affairs Group
13. Deputy Department Head, Hazards Control Department
14. Division Leader ES&H Teams Division
15. Manager, Assurance Review Office
16. Staff, Assurance Review Office
17. Contractor Staff, Assurance Review Office
18. Division Leader, Support Services, Design & Construction Division, Plant Engineering Department, Laboratory Service Directorate
19. Architect, Space & Site Planning Office, Plant Engineering Department, Laboratory Service Directorate
20. Staff, Mechanical Utilities Division, UTEL Department, Laboratory Service Directorate
21. Staff, Procurement and Material Department, Laboratory Service Directorate
22. Staff, Procurement and Material Department, Laboratory Service Directorate
23. Staff, Procurement and Material Department, Laboratory Service Directorate
24. Staff, Procurement and Material Department, Laboratory Service Directorate
25. Environmental Engineer, Department of Energy, Livermore Environmental Programs Division
26. Earth Sciences Division Leader, Energy and Environment Directorate
27. Assurance Manager, Energy and Environment Directorate
28. Facility POC, Energy and Environment Directorate
29. Improvement Task Force

Documents Reviewed

1. Assurance Review Office. *LLNL NESHAPs Program Assessment.* Final. ARO 02-010. February 7, 2003.

2. Assurance Review Office. *ARO Environmental Assessment Plan.* ARO 04-001. Undated.

3. Controlled Items/Services List. February 9, 2004.

4. Department of Energy (DOE) Order 450.1. *Environmental Protection Program.* January 15, 2003.

5. Department of Energy (DOE) Order 450.1 guidance I. *Implementation Guide for use with DOE O 450.1, 'Environmental Protection Program'.* DOE G 450.1-1

6. Department of Energy (DOE) Order 450.1 guidance II. *Implementation Guide for Integrating Environmental Management Systems into Integrated Safety Management Systems.* DOE G 450.1-2

7. Environmental Safety and Health Manual, Volumes I – IV.

8. Environmental Protection Department. *Quality Assurance Management Plan.* Revision 4. UCRL-AR-146357. November 2001.

9. International Organization for Standardization (ISO). ISO 14001. *Environmental Management Systems -- Specification with Guidance for Use.* September 1996

10. Lawrence Livermore National Laboratory (LLNL). Integrated Work Sheet (IWS). ES&H Discipline Review for IWS, examples. February 26, 2004.

11. Lawrence Livermore National Laboratory (LLNL). Integrated Work Sheet (IWS) System. February 26, 2004.

12. Lawrence Livermore National Laboratory (LLNL). *Integrated Safety Management System Description—Version 6.0.* UCRL-AR-132791. March 31, 2003.

13. Lawrence Livermore National Laboratory (LLNL) ES&H Website.

14. Lawrence Livermore National Laboratory (LLNL) Organizational Websites.

15. Mechanical Utilities Division, Energy Management Program. *FY 2004 Comprehensive Energy Management Plan.* December 30, 2003.

16. Plant Engineering Department. *Work Management Plan for Title I, II, and III Project Reviews in Plant Engineering.* Revision 1. January 1, 2000.

17. Plant Engineering Department. *LLNL Facilities Specifications, Section 01210, Environmental Protection.* December 8, 2003.

18. Plant Engineering Department. *LLNL Facilities Specifications, Section 01010, Administrative Requirements.* August 18, 2003.

19. Safety, Security and Environmental Protection Directorate. *Annual Self-Assessment Report for 2002.* April 2003.

20. Safety, and Environmental Protection Directorate. *Environment, Safety, and Health Self-Assessment Plan*. March 2004.

ATTACHMENT 1. ISO 14001 Environmental Management System Self-Assessment Checklist [from Global Environmental Management Initiative (GEMI)] and instructions

PURPOSE OF THIS CHECKLIST

The checklist is designed to allow for a rapid self-assessment of an organization or facility to determine how closely existing management practices and procedures correspond to the elements of the standard.

The criteria of the draft standard have been rephrased in the format of a simple questionnaire, with a three-part scoring system, as explained in this document.

This in turn can serve as the starting point of a "gap analysis" to identify management tools or system elements that might usefully be implemented in the organization to help improve overall environmental performance.

HOW TO USE THIS CHECKLIST

On the following pages are a series of questions to identify to what extent your environmental management system is complete in comparison to the requirements set in the ISO 14001 standard. To facilitate answering the questions, there is a table beneath each question with three columns of examples. Each column corresponds to a score. The examples in the first column illustrate a situation which does not comply at all with the requirement and has the score "0". The examples in the second column illustrate a situation where the requirement is more or less fulfilled, but where there is still room for improvement and a score "1" applies. Finally in the third column, the examples illustrate a situation in which the requirement appears to be completely fulfilled and a score "2" applies.

How to Score

It is possible to calculate a score by using one of two methods. In the first method, you should begin with the first column to determine if the situation described therein accurately reflects the situation in your organization or facility. If not, then proceed to the second column and make the same decision. Eventually, move on to the third column and ask the same questions. In this way, you "build" progressively on your score.

Verify whether one of the paragraphs in this box is applicable to the situation in your organization.
- If this is the case, your score for this question will be "0."
- If this is not the case, proceed in next column. Verify whether any of the statements in this box is applicable to the situation in your organization.
- If this is the case, your score for this question will be at least "1".
- Proceed to the next column, to verify whether your score is even better or to identify the areas where you could improve your environmental management

system. Verify whether your organization conforms with ***all*** the paragraphs in this box.

- If this is the case, your score for this question will be "2." Congratulations, you successfully implemented this aspect of the environmental management system.
- If this is not the case, your score remains "1." You have identified an area where your environmental management system can be improved.

Score

Write your score in the space provided, and note any comments or observations in the appropriate space (e.g., any actions to be taken to improve situation or score.) Alternatively, a process of elimination can be used. In this case, begin with the third column and determine whether all or some of the situations described apply to your organization. If all statements apply, give your organization a "2". If none, or only some, of the statements apply, move then to the middle column. If any of these statements apply to your organization, then assign a score of "1". If none of these statements apply, then assign a score of "0".

EVALUATION OF FINAL SCORE

This checklist contains a total of 31 questions in five different sections, corresponding to the five guiding principles (i.e., 1) Commitment and Policy, 2) Planning, 3) Implementation and Operation, 4) Checking and Corrective Action, 5) Management Review) listed in the ISO 14004 standard. A perfect score of "62" (i.e., every question received a score of 2) would indicate that the organization has all of the requisite EMS elements and procedures called for in the draft standard, sufficiently implemented to adhere to the standard. A score of "0" would likely seldom, if ever, occur, since even the most rudimentary elements of mere legal compliance would normally oblige the use of a minimum of management practices. It is important to bear in mind that how well an organization implements the standard's requirements is not the level of performance achieved using the standard, but the completeness and adequacy of the procedures and systems established to achieve that performance. Thus, for example, the mere fact that all employees are currently aware of their environmental responsibilities is insufficient under the terms of the standard. This could actually be a "chance" situation in the absence of defined and documented procedures to ensure that all employees (current and future) are made aware of these responsibilities. For ease of interpreting scores, we have broken down the standard into its principle elements and have established a rating system based on three ranges of possible score for each, as follows.

Principle 1: Commitment and Policy

Score 0-5 The organization either has no environmental policy, or its policy lacks most of the key elements, such as a commitment to continual improvement, required to fulfill the terms of the standard. Score 6-10. The organization has an environmental policy that meets many, but not all, of the requirements established under the standard. Score 11-14 Top management has established and documented an environmental policy that meets most, if not all of the criteria laid down in the standard. This policy takes into account

most, if not all, of the environmental aspects and is well communicated, both inside and outside of the organization. However, if the policy is not appropriate to the nature, scale and environmental impacts of the organization's activities, products or services, subsequent development of the EMS might be compromised.

Principle 2: Planning

Score 0-3 The organization has focused little, if any effort on identifying its relevant environmental aspects and setting achievable objectives and targets; its environmental management program is insufficient to implement the environmental policy. Score 3-6 The organization has made progress in identifying most of its environmental aspects as well as the legal requirement to which it is subject, and might have established some objectives and targets which its environmental management program is designed to achieve, but much progress is still required. Score 6-10 Most, if not all, of the required procedures exist to identify how its activities, products and/or services impact the environment, and to keep up to date on changing regulations. Measurable targets and objectives have been set for most, if not all appropriate levels of the organization; an action program exists to ensure their attainment. On the other hand, if clear, documented targets and objectives have not been established on the basis of a fairly complete identification of all environmental aspects of the business, its environmental action program may well overlook certain key issues of concern.

Principle 3: Implementation and Operation

Score 1-8 Existing procedures do not fully take into account all environmental aspects at all levels and activities of the organization. Specific responsibilities and accountabilities might not be sufficiently communicated throughout the organization. Sufficient resources and technical competencies might yet be lacking. Score 9-18 Many procedures to achieve the policy's objectives and targets exist, but they might not include emergency situations. Responsibilities and accountabilities for their implementation have been assigned for the most part, and much, but not all of the needed resources requirements have been made available. Score 19-26 Most, if not all, areas of responsibility have been assigned, and resources allocated. Operating and other procedures have been developed, documented and communicated. Personnel are trained in their use and in complying with their environmental responsibilities. Document controls exist to ensure that systems are kept up to date. But, if operations and activities associated with or causing significant environmental aspects have not been identified (see Principle 2) or if documented procedures have not been established to ensure that they are performed in accordance with the environmental policy, implementation will not meet the terms of this standard.

Principle 4: Checking and Corrective Action

Score 1-3 Few, if any procedures have been developed or implemented for checking the performance of the EMS and its component elements; and thus, areas of non-conformance cannot be adequately identified; as a

result, corrective or preventive measures cannot be effectively taken. Score 4-7 The organization has established many of the measurement and evaluation procedures required by the standard, and might have some of the key elements for dealing with situations of non-conformity. Some important records are maintained, and EMS audits might be carried out. However, much improvement is still warranted to conform to the standard. Score 8-10 The organization has implemented the majority of procedures and programs described in the standard to effectively and regularly monitor and measure the applicable characteristics of operations and activities, as well as to detect and correct areas of non-conformity. Adequate procedures exist for management of most, if not all, appropriate records, and a regular EMS audit program has been established. Even with a high score, however, the overall performance in meeting these criteria will be placed in serious doubt if the organization does not have a program and documented procedures for periodic audits of the EMS, which are adequate to ensure that conformity with policies, objectives and targets is indeed systematic, and not accidental

Principle 5: Management Review

Since there is only one question in this section, your score for the question posed will give an adequate indication of your score for the section. In any event, the organization cannot substantively fulfill this requirement if it does not periodically review the basic assumptions upon which its EMS is based.

Overall Score

A high score in any section is not necessarily a sign that the requirement is essentially met, if the core key criteria in that section is not met. Moreover, because all principles and elements are closely interlinked, a low score in any given section could place in doubt the higher scores achieved elsewhere.

Attachment

4.2 ENVIRONMENTAL POLICY

Principle 1: Commitment and Policy *"The environmental policy is the driver for implementing and improving the organization's environmental management system."*

4.2 HAS TOP MANAGEMENT DEFINED THE ORGANIZATION'S ENVIRONMENTAL POLICY?

0 Top management has not defined an environmental policy yet.

1 An environmental policy was issued, but it is not clear that it was defined and endorsed by top management.

The environmental policy has not been defined within the context of the environmental policy of the broader corporate body (if any) of which the organization is a part, and has not received the endorsement of that body (*see Annex A to the Standard, A.4.2*).

2 Top management has defined the organization's environmental policy in a written document and made it public.

The environmental policy has been defined and documented within the context of the environmental policy of the broader corporate body (e.g., the parent company or other overall organization, if any) and has the endorsement of that body (*see Annex A to the Standard, A.4.2*).

Score: _____2_____

Score Basis:
The ES&H policy and other supporting policies related to the environment broadly reflect the nature and scale of environmental impacts. The Director signed the policy, which was defined within the context of the mission and is applicable to the entire Laboratory.

Attachment

4.2.A IS THIS ENVIRONMENTAL POLICY APPROPRIATE TO THE NATURE, SCALE AND ENVIRONMENTAL IMPACTS OF ITS ACTIVITIES, PRODUCTS OR SERVICES?

0 The environmental policy was not developed with a view to the nature, scale or impacts of activities, products or services.

1 The organization has an environmental policy, which partially reflects the nature, scale and environmental impacts of its activities, products or services.

The policy reflects broadly the nature, scale and environmental impacts of the organization's activities or products or services, but not all three.

2 The organization has consciously examined the nature and scale of its activities, products and services.

The policy is periodically reviewed and revised to reflect changing conditions and information concerning the nature, scale and environmental impacts of its activities, products and services.

The areas of application of the policy are clearly identifiable.

Score: _____1 ____

Score Basis:
The ES&H policy and other supporting policies related to the environment broadly reflect the nature and scale and environmental impacts. However, interviews indicate that there is wide variation in interpretation of the policy. There was no indication that the policy(ies) are periodically reviewed to reflect changing conditions, although the ISMS Description Document is reviewed annually and the ES&H Manual is frequently reviewed an updated.

Attachment

4.2.B DOES THE ENVIRONMENTAL POLICY INCLUDE A COMMITMENT TO CONTINUAL IMPROVEMENT AND PREVENTION OF POLLUTION?

0 The environmental policy does not include a clear commitment to continual improvement and prevention of pollution.

1 The environmental policy does not commit to both continual improvement and prevention of pollution, but only commits to one of these.

2 The environmental policy contains a clear commitment to pursue continual improvement in environmental performance by putting in place an effective environmental management system.

The policy commits to the prevention of pollution.

Score: _____1 _____

Score Basis:
The ES&H Policy does not explicitly include either pollution prevention or continual improvement. However, the Waste Minimization Policy (Vol. 1, Doc 1.2, Section 3) implicitly includes pollution prevention since the policy source is the *Director's Statement on Waste Minimization, in the Waste Minimization and Pollution Awareness Plan* (May 31, 1991). In addition, there is an objective for continuous improvement in Quality Assurance Document (Document 41.1) of the ES&H Manual.

Also, the ISMS Description Document uses the term "Safety" "… synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment (as defined in DOE Policy 450.4)." Clause 6.7 of Contract 48 expands the definition of safety by "including pollution prevention and waste minimization." [NOTE: The ES&H Manual defines "safe," as used in these objectives, means environmentally benign and healthy (Vol. 1, Doc 1.2, Section 2).]

Attachment

4.2.C DOES THE ENVIRONMENTAL POLICY INCLUDE A COMMITMENT TO COMPLY WITH RELEVANT ENVIRONMENTAL LEGISLATION AND REGULATIONS, AND TO OTHER REQUIREMENTS TO WHICH THE ORGANIZATION SUBSCRIBES?

0 The environmental policy does not include a commitment to comply with relevant environmental legislation and regulations, or to other requirements to which the organization subscribes.

1 The environmental policy includes a commitment to comply with relevant environmental legislation and regulations, but does not mention any commitment to any other requirements to which the organization subscribes.

The policy includes a commitment to adhere to or comply with other requirements to which the organization subscribes (e.g. "Responsible Care") but does not explicitly commit the organization to comply with relevant legislation.

2 The environmental policy includes a clear commitment to comply with relevant environmental legislation and regulations, as well as to all other requirements to which the organization subscribes (such as the ICC Business Charter for Sustainable Development, for example).

Score: _____2_____

Score Basis:
The Laboratory's ES&H Policy specifically states "…Furthermore, it is the policy of LLNL to comply with applicable ES&H laws, regulations, and requirements." While the policy does not specify the other requirements, the ISMS Description Document identifies and implements other requirements (e.g., EPA's and DOE's pollution prevention guidance).

4.2.D DOES THE ENVIRONMENTAL POLICY PROVIDE THE FRAMEWORK FOR SETTING AND REVIEWING OF ENVIRONMENTAL OBJECTIVES AND TARGETS?

0 The environmental policy is not specific enough to guide the setting of environmental objectives and targets.

The policy has been written in such a way that may leave its readers confused as to its overall goals and objectives. The policy does not specify any commitments.

1 The environmental policy is specific enough to guide the setting of environmental objectives and targets in many of the environmental aspects of relevance to the organization.

It does not, however, provide sufficient guidance with regard to all key environmental aspects.

Overall, the environmental policy is sufficiently clear as to be capable of being understood by most interested parties, but there are some portions that might be misunderstood or which have caused confusion.

2 The environmental policy is clear and specific enough to guide the setting of environmental objectives and targets.

The policy is sufficiently clear to be capable of being understood by interested parties, including those responsible for reviewing environmental targets and objectives.

Score: _____1_____

Score Basis:
The ES&H policy and other supporting policies related to the environment broadly reflect the nature and scale of environmental impacts. However, interviews indicate that there is wide variation in interpretation of the policy. As an example, the Laboratory ISMS focuses on compliance. However, the Laboratory does monitor and track other environmental aspects that do not have a specific regulatory driver (e.g., recycling, pollution prevention activities, energy management).

The reporting and use of these targets and objectives by management does not appear to be consistently applied. As examples, the SEP 2002 annual ES&H self-assessment and 2004 ES&H self-assessment plan do not consider the full spectrum of pollution prevention activities the Laboratory is engaged in nor does it discuss energy or water conservation activities that might be guided under the Comprehensive Energy Management Plan.

Attachment

4.2.E IS THE ENVIRONMENTAL POLICY DOCUMENTED, IMPLEMENTED AND MAINTAINED, AND COMMUNICATED TO ALL EMPLOYEES?

0 The environmental policy has not been documented (i.e., in written or electronic form) or communicated to all employees.

No provisions have been made by management for the maintenance or implementation of the environmental policy (e.g., top management have not designated a specific management representative with defined responsibility and authority for implementing the environmental management system of which the policy forms a part).

1 The environmental policy has been documented, but it has not been communicated to all employees (e.g. there is no procedure to ensure that new employees receive a copy of the environmental policy).

There is no procedure to ensure the environmental policy is regularly reviewed and adapted to the changed perceptions and circumstances (i.e., maintained).

2 The environmental policy has been documented and it is communicated to all employees. All new employees receive a copy of the environmental policy.

The environmental policy is regularly reviewed and adapted to the changed perceptions and circumstances.

Score: _____1_____

Score Basis:
The Laboratory's Environmental Policy (ES&H Policy) is documented in the ISMS Description Document and the ES&H Manual. Employees have received briefings and training on ISMS and the implementing systems and processes that includes discussion of the policy and goals related to ES&H. The ISMS Description Document is reviewed annually and the ES&H Manual is reviewed and revised periodically. However, there was no indication that the policy(ies) are periodically reviewed to reflect changing conditions. As examples, the ES&H Policy was developed in 1996 and the Waste Minimization Policy was developed in 1991. Interviews support the conclusion that these have not been periodically reviewed for appropriateness.

Attachment

4.2.F IS THE ENVIRONMENTAL POLICY AVAILABLE TO THE PUBLIC?

0 The environmental policy is not made available to the public.

1 The environmental policy is made available to some members of the public (provided, for example, the public affairs or legal department approve its dissemination).

2 The environmental policy is freely available to any member of the public who requests it. Any amendments or modifications to the policy are also made available to the public.

Score: _____2_____

Score Basis:
The ISMS Description, which includes the ES&H Policy is available to the public. Both documents are available for public review on the website (under Safety).

Attachment

4.3 Planning Principle 2: Planning *"An organization should formulate a plan to fulfill Its environmental policy."*

4.3.1.A. IS THERE A PROCEDURE TO IDENTIFY THE ENVIRONMENTAL ASPECTS OF YOUR BUSINESS OVER WHICH YOU HAVE CONTROL OR INFLUENCE AND TO DETERMINE ACTUAL OR POTENTIAL SIGNIFICANT IMPACTS ON THE ENVIRONMENT?

0 There is no procedure to identify the environmental aspects of the business.

1 There is a procedure to identify the environmental aspects of the activities, products or services over which the organization has control or influence, but not all three.

Existing procedures are insufficient to determine which environmental aspects have or can have a significant impact on the environment (Note: information already developed for regulatory or other purposes may be used in this process).

If the organization does not have an existing environmental management system, it has not conducted a review to establish its current position with regard to the environment.

The organization does not keep information regarding its environmental aspects up to date.

2 There is a procedure to identify the significant environmental aspects of the business, including activities, products and services and it has been determined which of the environmental aspects of the business have or can have a significant impact on the environment.

If the organization did not have an existing environmental management system, its first step in this process was to establish its current position with regard to the environment by means of a review.

The process for identifying significant environmental aspects takes into account the cost and time of undertaking the analysis and the availability of reliable data (*see Annex A to the Standard, A.4.3.1*).

The analysis of significant environmental aspects of the organization takes into account the inputs and outputs associated with its current and relevant past activities, products and services.

The information is kept up to date.

Score: _____1_____

Score Basis:
The Laboratory uses Facility Safety Plans (FSPs) and Integrated Work Sheet (IWS) process to identify aspects on a facility and activity basis, respectively. Their use is described in Volume 3 (Document 3.3) of the ES&H Manual. In addition, the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) review process is described in Volume 3 (Document 3.6) of the ES&H Manual. The CEQA/NEPA reviews are triggered through use of IWSs and through other mechanisms (e.g., funding and construction project reviews and approval processes). The Laboratory also has a waste minimization and pollution prevention program, which is described in Volume 3 (Document 30.1) of the ES&H Manual.

Attachment

4.3.1.B. ARE ASPECTS RELATED TO THESE SIGNIFICANT IMPACTS CONSIDERED IN SETTING ENVIRONMENTAL OBJECTIVES?

0 The process of setting environmental objectives was not, or does not, take aspects related to significant environmental impacts into consideration.

1 The process of setting environmental objectives has taken or takes into consideration aspects related to significant environmental impacts for activities or products or services, but not all three. (Note: the organization may take into account the degree of practical control it may have over the environmental aspects being considered).

2 The process of setting environmental objectives has taken or takes into consideration aspects related to significant environmental impacts related to its activities, products and services.

Score: _____1_____

Score Basis:
Most objectives are based on threshold levels to ensure regulatory compliance (e.g., no discharges, emission, waste generation above permitted levels—no fines or violations over a time period). Other environmental objectives that are not strictly regulatory in nature (energy and water conservation) do have objectives identified within a specified timeframe. All of these goals do take aspects into consideration.

For mission activities, the IWS process does not have objectives and uses an a priori set of environmental aspects. The IWS process is not explicitly linked to the institutional objectives. Therefore, the aspects do not necessarily reflect all potential aspects (e.g., water conservation and energy conservation, traffic reduction are not explicitly identified on the checklist). A mitigating factor is that frequently the same subject matter expert assists in reviews or updates of both institutional or directorate-level objectives and improvements of the IWS process or the review of specific IWSs.

Attachment

4.3.2 DO YOU HAVE A PROCEDURE TO IDENTIFY AND HAVE ACCESS TO LEGAL REQUIREMENTS APPLICABLE TO THE ENVIRONMENTAL ASPECTS OF YOUR ACTIVITIES, PRODUCTS OR SERVICES?

0 There is no documentation on environmental legislation and regulations applicable to the organization, nor of the other environmental requirements to which the organization subscribes. No procedure exists to ensure that the organization will identify and access all new and modified legal or other requirements applicable to activities, products or services.

1 There is a procedure to identify all legal requirements that are applicable to the environmental aspects of the organization's activities or products or services, but not all three Procedures exist to identify and access most legal and other requirements, but not all.

Procedures exist to identify, access and update information relative to the nonregulatory environmental programs to which the organization subscribes, but not the legal requirements.

2 There is a procedure to systematically identify all new legal requirements that apply to the environmental aspects of the organization's activities, products or services.

The procedure also systematically identifies modifications to existing legal and other requirements.

The procedure ensures access to all existing, new and modified legal requirements.

The procedure also ensures identification, access and updating of other, non-regulatory requirements to which the organization subscribes.

Score: _____2_____

Score Basis:
The Laboratory uses the Work Smart Standards process to identify regulatory requirements. This is a mature system that is updated regularly and accounts for emerging new requirements. The Work Smart Standards process also identifies, non-regulatory requirements to which the organization subscribes.

Attachment

4.3.3 HAVE ENVIRONMENTAL OBJECTIVES AND TARGETS BEEN ESTABLISHED AND DOCUMENTED AND ARE THERE PROCEDURES FOR MAINTAINING THESE DOCUMENTS?

0 No environmental objectives and targets have been established by the organization. No environmental policy has been established.

1 Environmental objectives and targets have been established by the organization, but not documented.

The environmental objectives and targets were not established with consideration of legal or other requirements, significant environmental aspects, technological options, or interested parties.

No procedure exists to ensure that these objectives and targets are reviewed and maintained regularly.

Environmental objectives and targets have been established and documented but do not cover each and every relevant function and level within the organization.

Targets and objectives include consideration of end-of-pipe technological options and compliance with legal and other requirements, but do not reflect a commitment to pollution prevention.

Targets and objectives take into consideration the organizations' financial, operational and business requirements but not the views of interested parties.

2 Environmental objectives and targets have been developed at each relevant function and level within the organization.

The objectives are specific and the targets are measurable wherever practicable.

The objectives and targets are consistent with the environmental policy and reflect a commitment to pollution prevention.

The objectives and targets are in alignment with the significant environmental impacts associated with the organization's activities, products or services.

The organization has taken into consideration, when establishing (and reviewing) its objectives, legal and other requirements, technological options, financial, operational and business requirements, as well as the views of interested parties.

There is a procedure to ensure the objectives and targets are reviewed and updated regularly.

Score: _____1_____

Score Basis:
Some environmental objectives and targets have been established and documented by the organization. However, many times reports discuss status but do not compare the performance to a target. These are primarily focused on regulatory compliance. Environmental objectives and targets are not consistently established for non-regulatory aspects; although performance is tracked for many of these aspects (e.g., energy savings). Another limitation is, that since the removal of Appendix F measures, LLNL has no plans to replace them with another institutional process to track these targets and objectives.

Attachment

However, many of the appendix F measures were related to regulatory requirements. The focus on regulatory compliance for identifying targets and objectives appears to be based in large measure on consideration of the LLNL's financial, operational and mission requirements. The regulatory processes and the environmental planning process (NEPA/CEQA) are used to consider views of interested parties.

Attachment

4.3.4 HAS AN ENVIRONMENTAL MANAGEMENT PROGRAM FOR ACHIEVING THE OBJECTIVES AND TARGETS BEEN ESTABLISHED AND MAINTAINED?

0 No environmental management program has been developed.

1 In view of achieving the environmental objectives and targets, an environmental management program has been developed, including management procedures for some relevant functions and levels of the organization, but not for all.

The environmental management program does not stipulate the means or timeframe for achieving its objectives and targets.

A program was established, but has not kept pace with new developments or products in the organization.

2 The organization has established an environmental management program for achieving its objectives and targets, which describes how the organization's targets will be achieved.

The program identifies the personnel responsible for implementing the environmental policy and who is responsible for achieving the objectives and targets at each relevant function and level within the organization.

The program includes the means available (e.g. financial, physical or human resources) by which the organization shall achieve its objectives and targets.

The program has a clear timeframe, which identifies what will be done or achieved by when and how.

The environmental management program is amended where relevant to ensure that environmental management will be applied to new developments and new or modified activities, products or services.

The environmental management program includes environmental reviews for new activities.

Score: _____1_____

Score Basis:
The ISMS System has all of the components of an EMS including policy, roles, and responsibilities, means to achieve objectives, etc. However, the process to identify environmental aspects, objectives, and targets is not as mature as the health and safety components. The ES&H Manual focuses on the activity and facility-level aspect identification and controls. However, explicit targets are not provided; implicit targets are to have no regulatory compliance issues (e.g., no permit violations, fines, etc.). Other objectives tracked on an institutional basis (e.g., energy and water conservation) are not explicitly called out in the IWS or FSP processes.

Attachment

4.4 Implementation and Operation Principle 3: Implementation *"For effective implementation an organization should develop the capabilities and support mechanisms necessary to achieve its environmental policy, objectives and targets."*

4.4.1.A HAVE ROLES, RESPONSIBILITY AND AUTHORITIES BEEN DEFINED, DOCUMENTED AND COMMUNICATED?

0 Top management have not appointed (a) specific environmental management representative(s).

1 Top management have appointed (a) specific environmental management representative(s) but the roles, responsibilities and authority of this individual (these individuals) have not been defined or documented.

Roles, responsibilities, and authorities of other operational management and staff functions for implementing the various elements of the environmental management system have been defined but have not been documented. The roles, responsibilities, and authorities of other operational management and staff functions have not been communicated to personnel.

2 Top management have appointed (a) specific environmental management representative(s).

The environmental management representative(s) has a defined role, responsibility and authority for ensuring that the requirements of the environmental management system are established, implemented and maintained in accordance with the ISO 14001 standard and for reporting performance of the EMS to top management.

Roles, responsibilities, and authorities of other operational management and staff functions for implementing the various elements of the environmental management system have been defined, documented and communicated to personnel in order to facilitate management.

The environmental management representative reports on the performance of the environmental management system to top management. These reports are used by top management to review the environmental management system and the basis for its improvement.

Score: _____2_____

Score Basis:
The ISMS and ES&H Manual provide well-defined roles and responsibilities. The ES&H Committee represents Directorate management and has access to Senior Laboratory Management.

Attachment

4.4.1.B DOES MANAGEMENT PROVIDE THE RESOURCES ESSENTIAL TO THE IMPLEMENTATION AND CONTROL OF THE ENVIRONMENTAL MANAGEMENT SYSTEM?

0 Management has not identified the resources essential to the implementation and control of the environmental management system.

Resources may include human resources, specialized skills, technology, equipment, and financial resources but specialized skills are lacking.

1 Management has identified some of the resources essential to the implementation and control of the environmental management system, but specialized skills are lacking (i.e., technology, equipment, and financial resources).

Management has allocated some of the essential resources, such as human but not financial.

2 Management has identified the resources essential to the implementation and control of the environmental management system.

Management provides all the resources essential to the implementation and control of the environmental management system.

Score: _____2_____

Score Basis:
Resources are provided especially for support of IWS, FSP, and OSP preparation, reviews, and assessments and regulatory compliance appear sufficient. However, many interviewees considered funding to be very conservative for many non-regulatory environmental performance activities including pollution prevention and energy/water conservation programs, sustainable design etc., resource stewardship. Clarification of criteria and the process for funding prioritization may need to be more fully communicated.

Attachment

4.4.2.A HAVE ALL TRAINING NEEDS BEEN IDENTIFIED?

0 No procedures have been established to identify training needs.

Training needs have not been identified.

1 Procedures have been established to identify training needs.

None or only some of the concerned personnel have received training.

Procedures have not been established to ensure that contractors working on the organization's behalf are able to demonstrate that their employees have the requisite training.

2 Procedures have been established to identify training needs

Procedures have been developed to ensure that all personnel whose work may create a significant impact upon the environment, has received appropriate environmental training.

The procedures also require that contractors working on the organization's behalf are able to demonstrate that their employees have the requisite training.

A system has been established to periodically review the procedures used to identify training needs and ensure that proper training is provided.

Score: _____2_____

Score Basis:
LLNL has a training system that has been growing in effectiveness and maturity over the past few years. It has been one of the focus areas for ISMS process improvement. The LLNL LTRAIN system includes an environmental training requirements link to individuals, positions, and activities. Training requirements are applicable to contractors. Training requirements are identified during the development, review and approval of IWSs, FSPs, and other project and activity related planning. In addition, training is also identified as part of annual employee reviews. However, this review did not assess the content of training courses to confirm if training adequately covered all environmental aspects.

Attachment

4.4.2.B HAVE PROCEDURES BEEN ESTABLISHED TO MAKE EMPLOYEES OR MEMBERS AT EACH RELEVANT FUNCTION AND LEVEL AWARE OF ENVIRONMENTAL ISSUES?

0 No procedures have been established to make personnel at each relevant function and level aware of environmental issues.

1 Procedures have not been established to ensure all personnel at each relevant function and level are aware of environmental issues. Only the personnel in certain departments have been made aware of environmental issues.

Only the personnel in certain departments are made aware of the actual or potential significant environmental impacts of their work activities and the environmental benefits of improved personal performance.

There is an overall awareness of environmental issues; however, not all personnel are made aware of the potential consequences of departure from specified operating procedures.

Relevant training is provided, but no procedure exists for ensuring that all new employees receive appropriate training and awareness.

2 Procedures exist to ensure that all relevant personnel receive training to increase awareness of the importance of conformance with the requirements of the environmental management system.

Procedures exist to ensure that all employees are made aware of the actual or potential significant environmental impacts of their work activities and the environmental benefits of improved personal performance.

All employees are made aware of their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system, including emergency preparedness and response requirements.

All employees are made aware of the potential consequences of departure from specified operating procedures.

Score: _____2_____

Score Basis:
Procedures and system in place. The primary process results in IWSs, OSPs, and FSPs. These documents are developed by employees. Participating in the development of the document and training ensures that employees are aware of consequences of deviation from the procedures. As identified elsewhere the relationship of the activities consequences in relation to institutional goals may not be obvious to workers.

Attachment

4.4.2.C HAS IT BEEN ENSURED THAT PERSONNEL PERFORMING TASKS WHICH CAN CAUSE SIGNIFICANT ENVIRONMENTAL IMPACTS ARE COMPETENT?

0 Appropriate educational, training or experience requirements have not been identified.

1 Management has determined the level of experience, competence and training necessary to ensure the capability of personnel, especially those carrying out specialized environmental management functions.

Not all personnel performing the relevant tasks meet the minimum educational/training or experience requirements identified by management.

2 Management has determined the level of experience, competence and training necessary to ensure the capability of personnel, especially those carrying out specialized environmental management functions.

It has been ensured that personnel performing tasks, which may cause significant environmental impacts, have the required competence.

The level of required competence of such personnel has been determined on the basis of appropriate education, training and/or experience.

Score: _____2_____

Score Basis:
The LLNL Training Program identifies training requirements that are generally required, job-specific, and facility specific. It also builds on the longer-term hiring processes and employee performance appraisal system.

Attachment

4.4.3 HAVE APPROPRIATE PROCEDURES BEEN ESTABLISHED FOR INTERNAL AND EXTERNAL COMMUNICATIONS REGARDING THE ENVIRONMENTAL ASPECTS AND THE ENVIRONMENTAL MANAGEMENT SYSTEM?

0 No procedures have been established for internal nor external communications regarding the environmental aspects and the environmental management system.

1 Some procedures have been established for internal communications between the various levels and functions of the organization, but not for external communication.

Procedures have been established for receiving relevant communications from external interested parties, but there are no procedures to document or respond to communications with external parties.

There are no procedures to periodically review the procedures used for internal and external communications.

Procedures exist with regard to receiving, documenting and responding to external sources concerning the environmental management system, but not regarding its environmental aspects

2 Procedures have been established for internal communications between the various levels and functions of the organization.

Procedures have been established for receiving, documenting and responding to relevant communications from external interested parties on its Environmental Management System.

The organization has considered the various possible processes for external communication on its significant environmental aspects and has recorded its decision in this regard.

All these procedures are reviewed and adapted to changing circumstances and perceptions.

Score: _____2_____

Score Basis:
The ES&H Manual provides the process for internal communications. In addition, the manual describes the reporting process to regulatory agencies (e.g., relevant communications and communication on its significant aspects). EPD organizations have more detailed procedures as needed to fully implement regulatory communications. The Laboratory also has external communication processes defined by the public affairs organization.

Attachment

4.4.4 IS THERE DOCUMENTATION WHICH DESCRIBES THE ENVIRONMENTAL MANAGEMENT SYSTEM?

0 The core elements of the environmental management system have not been described and documented.

1 The core elements of the environmental management system have been identified, described and documented but the interaction or relationships between the different elements is not documented.

This documentation does not provide direction on where to find or classify related environmental documentation.

2 The core elements of the environmental management system have been identified, described and documented.

The interactions between the core elements of the environmental management system have been described.

These descriptions have been documented in paper or electronic form.

This documentation provides direction on where to find or classify related environmental documentation.

Score: _____1_____

Score Basis:
The EMS is described mainly in the ISMS Description Document and the ES&H Manual. There are some components that are not clearly included in these two documents. Examples include the Site Annual Environmental Report and the Comprehensive Energy Management Plan. However, the interactions or relationships (e.g., aspects/hazards in the IWS versus targets) are not well described.

Attachment

4.4.5.A HAVE PROPER DOCUMENT CONTROL PROCEDURES BEEN ESTABLISHED?

0 Management has not identified documents that must be maintained and controlled.

There are no procedures for controlling and maintaining documents.

1 Management has identified the documents required by ISO 14001 that must be maintained and controlled.

Certain document control procedures have been established.

It has not been determined who is responsible or authorized for the creation and modification of the various types of documents.

There is no system in place for the documents to be periodically reviewed and revised.

No defined procedures exits to ensure that the current versions of relevant documents are not available at all locations where operations essential to the effective functioning of the system are performed.

2 Management have established and maintain procedures for controlling all documents required by ISO 14001 in order to ensure that they can be located.

Procedures exist to ensure that all documentation is periodically reviewed and revised as necessary, and approved for adequacy by authorized personnel.

Procedures exist to ensure that current, legible versions of relevant documents are available at all locations where operations essential to the effective functioning of the system are performed.

Procedures exist to ensure that obsolete documents are promptly removed from all points of issue and all points of use, or otherwise assured against unintended use.

Procedures exist to ensure that any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified.

Score: _____2_____

Score Basis:
The Configuration Management portion (Document 41.2) of the ES&H Manual describes the document control requirements and process. In addition, the Quality Assurance Program (Document 41.1) links to the LLNL Records Retention Schedule. Each Directorate has a QA Plan, which describes its records management process. The EPD QA Management Plans is an example of an organizations identification of records and its procedure for document control.

Attachment

4.4.5.B. ARE ALL DOCUMENTS IN A PROPER STATE AND FORMAT?

0 Available documents are barely legible if at all (e.g., copies of copies, fax documents that are unclear, etc.)

Available documents are not (or not all) dated to indicate originals or revisions.

No procedures or responsibilities have been established governing the creation or revision of Environmental Management System documents.

1 All documentation is legible and readily identifiable.

All documents are dated, with dates of revision. Different formats for like documents exist; and, documents are not readily identifiable.

Obsolete, outdated documents are not discarded.

2 All documentation is legible.

All documents are dated, with dates of revision.

All documents are readily identifiable.

All documents are maintained in an orderly manner.

All documents are maintained for a period specified in the documents.

Clear instructions are provided for document maintenance, including updating or replacement with revisions and the proper disposition of obsolete documents.

Score: _____2_____

Score Basis:
The Configuration Management portion (Document 41.2) of the ES&H Manual describes the document control requirements and process. In addition, the Quality Assurance Program (Document 41.1) links to the LLNL Records Retention Schedule. Each Directorate has a QA Plan, which describes its records management process. The EPD QA Management Plans is an example of an organizations identification of records and its procedure for document control. Based on a limited number of documents; all were dated, identifiable, and maintained.

Attachment

4.4.6.A HAVE THOSE OPERATIONS AND ACTIVITIES ASSOCIATED WITH THE SIGNIFICANT ENVIRONMENTAL ASPECTS BEEN IDENTIFIED?

0 Management has not identified the operations and activities that may cause significant environmental impacts.

The organization has not defined a policy or objectives and targets.

1 Management has identified some or all of those operations and activities that may cause significant environmental impacts but has not documented these situations where the absence of documented procedures could lead to non-compliance with the policy or deviations from the objectives and targets have not been identified.

2 The operations and activities that are related to the significant environmental aspects of the organization have been identified and documented.

Situations requiring documented procedures to ensure compliance with policy and attainment of objectives and targets have been identified.

Score: _____1_____

Score Basis:
LLNL has a system for identifying aspects at the activity and facility levels, resulting in documentation (e.g., IWS, OSP, and FSP preparation). The process relies on regulatory thresholds to define significance and do not necessarily include monitoring and comparison to targets.

4.4.6.B HAVE SUCH OPERATIONS AND ACTIVITIES BEEN PLANNED IN SUCH A WAY AS TO ENSURE THEY ARE CARRIED OUT UNDER SPECIFIED CONDITIONS?

0 Procedures have not been established for any of the operations and activities associated with the identified significant environmental aspects in line with its policy, objectives and targets.

1 Procedures have been established for most, but not all of the operations and activities associated with the identified significant environmental aspects in line with its policy, objectives and targets.

Procedures are not periodically reviewed.

Procedures are not communicated to suppliers and contractors.

Operating criteria is not stipulated in the procedures.

2 Documented procedures have been established for all the operations and activities, including maintenance.

Operating criteria have been stipulated in these procedures (e.g. one is allowed to proceed with air emissions from a production process, if certain threshold limits are not exceeded).

Documented procedures have been established for goods and services used by the organization that are related to the significant environmental aspects.

Relevant procedures are communicated to suppliers and contractors.

All procedures are reviewed periodically and adapted when necessary.

Score: _____1_____

Score Basis:
The IWSs, FSPs, and OSPs are the primary procedures established for all the operations and activities, including maintenance. Operating criteria are identified in the documentation. Environmental requirements are communicated for chemicals and some other goods and services. The controlled item/services list is one tool used by Procurement to identify items/services that may have a significant environmental impact. The list identifies chemical and cleaning fluid replacement; however, the list did not identify many replacement or recyclable products. LEED design requirements are beginning to be considered more consistently for new building construction; although there does not seem to be a firm institutional commitment (e.g., goals or targets are not identified). ES&H Manual Document 42.1 describes the flowdown for subcontractors.

Attachment

4.4.7.A HAVE PROPER PROCEDURES BEEN ESTABLISHED TO IDENTIFY THE POTENTIAL FOR AND TO RESPOND TO ACCIDENTS AND EMERGENCY SITUATIONS?

0 There are no procedures in place to identify the potential for or to respond to accidents and emergency situations.

1 Procedures have been established to identify the potential for environmental incidents, accidents and emergency situations.

Procedures have not been defined for emergency response in all identified potential situations.

There is no system to periodically review and revise the procedures.

Procedures have not been defined for proactively preventing emergencies in identified potential situations or for mitigating environmental impacts associated with such emergencies (e.g., fire response procedures do not include spill prevention, control or countermeasure procedures).

2 Procedures have been established to identify the potential for and to respond to environmental incidents, accidents and emergency situations.

The procedures also focus on preventing and mitigating the environmental impacts that may be associated with accidents or emergency situations.

After the occurrence of accidents or emergency situations, the procedures are reviewed and where necessary revised to prevent re-occurrence.

Score: _____2_____

Score Basis:
Procedures have been established to identify the potential for and to respond to environmental incidents, accidents, and emergency situations. The procedures include some consideration of preventing and mitigating environmental impacts that may be associated with accidents or emergency situations. After the occurrence of accidents or emergency situations, the procedures are reviewed, and where necessary, revised to prevent re-occurrence.

Attachment

4.4.7.B ARE SUCH PROCEDURES PERIODICALLY TESTED AND REVIEWED / REVISED AFTER TESTS OR AFTER ACTUAL INCIDENTS? SITUATIONS?

0 No tests have ever been carried out of the emergency response procedures.

1 One or two tests have been carried out of certain procedures, but tests are not regularly (i.e., periodically) carried out.

No procedure exists for investigating accidents or incidents with a view to revising emergency response procedures as appropriate.

2 Tests of emergency response procedures are regularly (i.e., periodically) carried out.

Specific procedures have been established and implemented for the review of performance of such tests and their efficiency in the situations for which they are designed.

Specific procedures exist and are implemented for the systematic investigation of all accidents and incidents impacting the environment and foresee steps to appropriate revision/corrective measures.

Score: _____2____

Score Basis:
Procedures have been established and are reviewed, tested, and updated at least annually. Specific procedures exist and are implemented for the systematic investigation of all accidents and incidents impacting the environment and foresee steps to appropriate revision/corrective measures. Operating procedures (e.g., OSPs, FSPs, IWSs) are generally updated to reflect lessons-learned.

4.5 Checking and Corrective Action
Principle 4: Checking and Corrective Action "*An organization should measure, monitor and evaluate its environmental performance.*"

4.5.1.A HAVE PROCEDURES BEEN ESTABLISHED FOR MONITORING AND MEASURING ON A REGULAR BASIS THE KEY CHARACTERISTICS OF THE OPERATIONS AND ACTIVITIES THAT CAN HAVE A SIGNIFICANT ENVIRONMENTAL IMPACT?

0 There are no procedures to monitor the key characteristics (e.g., quantity and characteristics of effluent discharges, air emissions, solid and hazardous waste; water, energy use; quantity of waste per unit of product produced, etc.) of the operations and activities that can have a significant environmental impact.

Required monitoring equipment is not controlled to ensure proper calibration and maintenance.

No procedures exist to verify compliance with relevant environmental legislation and regulations.

1 Procedures have been established for monitoring on a regular basis some of the key characteristics of the operations and activities that can have a significant environmental impact.

Procedures for either of the above have not been documented.

There is no system in place to periodically review these procedures.

The results of such monitoring are not documented or recorded.

2 Procedures have been established for monitoring on a regular basis the key characteristics of the operations and activities that can have a significant environmental impact.

The procedures require the recording of information to track performance, relevant operational controls and conformance with the organization's objectives and targets.

These procedures have been documented and are reviewed regularly.

Monitoring equipment has been calibrated and is maintained.

The records of this process are retained according to the organization's procedures.

Score: _____1_____

Score Basis:
Procedures have been established and focused on an activity or facility basis (e.g., IWSs, OSPs, FSPs). Aspect monitoring is primarily at the institutional level for regulatory and permit requirements. However, LLNL also uses the Site-Wide EIS, Pollution Prevention reports to DOE, Comprehensive Energy Management plan activities, and the Site Annual Environmental Report (SAER). These monitoring and reporting mechanisms are not completely integrated and therefore more difficult for management to assess on a systematic basis. As an example, the list of aspects is not consistent between institutional and activity level processes. Also, there is not a process to link the institutional and the

Attachment

IWS reviews together. In addition, some aspects (e.g., traffic) are not fully considered. The procedures require the recording of information to track performance, relevant operational controls and conformance with the organization's objectives. Many times, there are no targets unless mandated by regulation. Procedures are documented and are reviewed regularly. Monitoring equipment has been calibrated and is maintained. The records of this process are retained according to the organization's procedures.

Attachment

4.5.1.B ARE THERE ESTABLISHED DOCUMENTED PROCEDURES FOR THE PERIODIC EVALUATION OF COMPLIANCE WITH RELEVANT ENVIRONMENTAL LEGISLATION AND REGULATIONS?

0 No procedures exist for evaluating regulatory compliance.

1 Some procedures exist for evaluating compliance with relevant regulatory requirements but they either:
- do not include a detailed evaluation of all requirements or
- do not cover all aspects of operations, products and services.

Such evaluations are not conducted regularly or periodically.

2 Specific procedures have been established and are documented to evaluate regulatory compliance of all activities, products or services.

Procedures include measures to identify and document the relevant regulatory requirements with which such activities, products or services must comply.

Procedures establish the periodicity with which such evaluations must be conducted. Results of such evaluations are documented and reported to management.

Score: _____2_____

Score Basis:
The Laboratory has a mature process for evaluation of compliance with regulations. The process also identifies and considers emerging new requirements and regulations. The IWS, FSP, and environmental planning processes all include the regulatory compliance evaluations. These processes are all required to be completed before activities can be initiated. Not all aspects are included in the IWS.

Attachment

4.5.2 HAVE PROCEDURES BEEN ESTABLISHED FOR DEFINING RESPONSIBILITY AND AUTHORITY FOR HANDLING NONCONFORMANCE AND THE TAKING OF CORRECTIVE AND PREVENTIVE ACTION?

0 Management has not established procedures for defining responsibility and authority for handling potential non-conformance and taking corrective actions.

Incidences of non-conformance are not investigated to determine corrective or preventive actions.

1 Procedures have been established for defining responsibility and authority for handling and investigating nonconformance and taking corrective action.

These procedures are not updated in light of experience with actual situations of non-conformity.

Corrective or preventive actions are often "stop-gap" measures that do not fully reflect the magnitude of the problem or are not fully commensurate with the environmental impact encountered.

The written operating procedures are not updated to record/reflect "lessons learned" from previous nonconformance.

2 Procedures have been established and documented for defining responsibility and authority for handling and investigating incidences of nonconformance.

Procedures have been established and documented for defining responsibility and authority for taking action to mitigate any impacts caused by nonconformance and for initiating and completing corrective and preventive action.

Corrective or preventive measures taken to eliminate the causes of actual and potential non-conformance are always appropriate to the magnitude of problems and commensurate with the environmental impact encountered.

Any changes in the written operating procedures resulting from corrective and preventive action have been implemented and recorded.

Score: _____2_____

Score Basis:
Procedures have been established and are reviewed and updated annually (at a minimum) for investigating non-conformance. Operating procedures are generally updated to reflect lessons-learned. However, the information (lessons-learned and assessments) focuses on health and safety while there is little reporting on environmental aspects and impacts. There was evidence that IWSs and FSPs were reviewed and modified (e.g., SEP 2002 Self Assessment Report) based on findings. The focus is almost exclusively on regulatory compliance aspects of environmental performance.

Attachment

4.5.3 HAVE PROCEDURES FOR THE IDENTIFICATION, MAINTENANCE AND DISPOSITION OF ENVIRONMENTAL RECORDS BEEN ESTABLISHED AND MAINTAINED?

0 There are no procedures for the identification, maintenance and/or disposition of environmental records.

1 Procedures for the identification, maintenance and disposition of some environmental records have been established.

Certain environmental records are stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss.

Retention times are not always established or recorded.

Not all records relative to conformance to this standard are maintained.

2 Procedures for the identification, maintenance and disposition of environmental records have been established and are maintained.

The environmental records amongst others including training records and the results of audits and reviews, as well as the extent to which planned objectives and targets have been met.

These environmental records are legible, identifiable and traceable to the activity, product or service involved.

Environmental records are stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss.

The retention times of the various environmental records are established and recorded.

All records required to demonstrate conformity to this standard (including regulatory compliance) are maintained.

Score: _____1 _____

Score Basis:

Key records used to support permit, compliance, and other regulatory processes are identified, maintained, and can be retrieved. Similarly data and records supporting the Site Annual Environmental Report are in an equivalent condition.

However, there are multiple systems for the various environmental monitoring data, analyses, and reports. There is no single way to obtain them easily or to review them concurrently.

Retention times likely are not established for all records and are left at the discretion of the individual holder.

Attachment

4.5.4 DOES THE ORGANIZATION HAVE (A) PROGRAM(S) AND PROCEDURES FOR PERIODIC ENVIRONMENTAL MANAGEMENT SYSTEM AUDITS ?

0 No audit procedures have been established.

Audit procedures do not include an evaluation of the environmental management system (e.g., audits concentrate only on compliance with regulatory requirements).

1 A program and procedures for periodic environmental management system audits have been established.

The audits are aimed at determining whether or not the environmental management system has been properly implemented and maintained and whether the environmental management system conforms to planned arrangements. However, the periodicity of these audits or the audit program overall does not reflect the related potential environmental importance of the activity concerned, or does not take into account previous audits (if any).

Audit procedures are not fully comprehensive (e.g., they do not cover all of the following: scope, frequency and methodologies, responsibilities and requirements for conducting audits and reporting results).

The procedures do not ensure that information on the results of the audits is provided to management.

2 A program and procedures for periodic environmental management audits have been established.

The audit program is aimed at determining whether or not the environmental management system conforms to planned arrangements for environmental management and whether or not the environmental management system has been properly implemented and maintained.

The procedures ensure that information on the results of the audits is provided to management.

The audit program, including frequency audits, is based on the environmental importance of the activity concerned and the results of previous audits.

The audit procedures cover the scope of the audit, frequency and methodologies, required auditor competencies as well as the responsibilities associated with managing and conducting audits, and requirements for conducting audits and reporting results

Score: _____1_____

Score Basis:
The ISMS and ES&H Manual include a program and procedures for periodic self-assessments of the ISMS. The self-assessments include the environmental components of the ISMS. As an example, ARO has a 2004 environmental assessment plan (ARO 04-001) for non-radiological air emissions. Scope, frequency, and assessment methods are documented and the results are communicated to management. However, the environmental importance of the assessed activity and the results of previous audits do not appear to be consistently considered in the planning and execution of the self-assessments. The SEP 2002 Self-Assessment Report and the 2004 Plan do not appear to consider the full range of environmental aspects and impacts or a mechanism to review all aspects over several assessments (rotating basis).

4.6 MANAGEMENT REVIEW

Principle 5: Management Review *"An organization should review and continually improve itS environmental management system, with the objective of improving its overall environmental performance."*

4.6 HAS TOP MANAGEMENT REVIEWED THE ENVIRONMENTAL MANAGEMENT SYSTEM?

0 No arrangements exist to ensure that top management reviews the environmental management system to ensure continuing suitability, adequacy and effectiveness.

1 Top management has plans and arrangements to review the environmental management system to ensure continuing suitability, adequacy and effectiveness.

Such reviews are not documented. There is no schedule for periodically reviewing the environmental management system. The management review process is not adequate to ensure that the necessary information is collected to allow it to carry out the evaluation.

Management's review addresses the elements necessary for Environmental Management System implementation and the procedures associated with its implementation, but does not address possible needs to change the policy or its objectives and targets.

2 Top management has reviewed the environmental management system to ensure continuing suitability, adequacy and effectiveness.

As part of the review process, the necessary information is identified and collected to allow management to carry out this evaluation. Top management has determined the intervals at which it will review the environmental management system.

The management review addresses changing circumstances that might necessitate the possible needs for changes to policy, objectives and other elements of the environmental management system, in the light of environmental management system audit results, changing circumstances and the commitment to continual improvement.

Management's review is documented.

The review of the policy, objectives and procedures is carried out by the level of management that defined them.

Score: _____1_____

Score Basis:
Management reviews of the ISMS are conducted annually and documented. The environmental aspects reviewed annually are a subset of the aspects monitored and there did not appear to be a process that prioritizes or consistently includes additional aspects if/as necessary. Also, the reviews do not consistently address possible needs to change policy, objectives, or targets. In addition, many targets do not seem to be established; aspects are monitored and outcomes are reported (e.g., waste generation). The SEP 2002 ES&H Self-Assessment illustrates these points.

Attachment

Attachment 2. Crosswalk of ISO 14001 Elements to LLNL ES&H Manual

	ISO Principle	ISO 14001 Elements	LLNL ES&H Manual Statement of Evidence	ES&H Manual Sec
1	Policy	4.2.a Top management shall define the organization's environmental policy **and ensure that it is appropriate.**	Laboratory's ES&H policy to perform work in a manner that protects the health and safety of employees and the public, preserves the quality of the environment, and prevents property damage. The environment, safety, and health are to be priority considerations in the planning and execution of all work activities at the Laboratory. Furthermore, it is the policy of LLNL to comply with applicable ES&H laws, regulations, and requirements.	Vol 1 Part 1 Sec 1.2 see #4.2e below too
2	Policy	4.2.b Top management shall define the organization's environmental policy and **ensure that it includes a commitment to continuous improvement**	No specific statement in the general ES&H policy. Continuous improvements identified in other 'e' policies (waste min.) However, the Laboratory's safety goal is to continuously strive for a healthy, accident free, and environmentally sound workplace and community while providing the scientific and technical excellence needed to meet national missions. Similarly Waste Minimization and Pollution Prevention is the subject of the ES&H Manual Vol 3, Doc 30.1. Also, 'The objectives of the Laboratory's QA Program are to assure that:... e. Continuous improvement is emphasized.'	Vol 1 Part 1 Doc 1.2 Also, Vol 1 Doc 2.1 Sec 2.2 (Goal) Vol 4 Doc 41.1
3	Policy	4.2.c Top management shall define the organization's environmental policy and **ensure that it includes a commitment to comply with relevant legislation and regulations.**	Furthermore, it is the policy of LLNL to comply with applicable ES&H laws, regulations, and requirements	Vol 1 Part 1 Doc 1.2 Sec 1.0
4	Policy	4.2.d Top management shall define the organization's environmental policy and **ensure that it provides a framework for setting and reviewing objectives and targets**	Laboratory's safety goal is to continuously strive for a healthy, accident free, and environmentally sound workplace and community while providing the scientific and technical excellence needed to meet national missions. Deputy Director for Operations. The DDO has been delegated authority for conducting LLNL's ES&H Program. This includes: Approving ES&H-related Contract 48 requirements and assuring satisfactory achievement of the performance measurement goals specified in Appendix F	(Also see ISMS DD pg 1) Vol 1 Part 1 Sec 1.2 also Doc 2.1 Sec 3.2

Attachment

5	Policy	4.2.e Top management shall define the organization's environmental policy and **ensure that it is documented, implemented and maintained, and communicated**	It is the Laboratory's environment, safety, and health (ES&H) policy to perform work in a manner that protects the health and safety of employees and the public, preserves the quality of the environment, and prevents property damage. The environment, safety, and health are to be priority considerations in the planning and execution of all work activities at the Laboratory. Furthermore, it is the policy of LLNL to comply with applicable ES&H laws, regulations, and requirements (1996 policy). Also, Waste Minimization (May 31, 1991), ALARA policy (no date), D&D of Facilities Policy (April 22, 1992 & November 1994)	Vol 1 Part 1 Doc 2.1 Sec 2.0 Sec 1.2
6	Policy	4.2.f Top management shall define the organization's environmental policy and **ensure that it is available to the public**	The Laboratory will encourage participation by the public on matters related to environmental protection and health and safety issues of relevance to the community. Surveys, community meetings, and other means will be used to assess public interest and concerns. The Laboratory will encourage public participation by initiating communications and providing opportunities for citizens to input to the decision-making process on matters of significant public interest and by providing access to information on its environmental, safety, and health activities. (January 28, 1994)	Vol 1 Part 1 Sec 1.2, 11.0
7	Planning	4.3.1 The organization shall establish and maintain procedures **to identify environmental aspects of its activities, products or services**	IWS/SP Process The IWS is used by the authorizing organization both as a screening mechanism to ensure the appropriate amount of effort and support is used during the work planning process and as a mechanism to record that the work has been authorized and is ready to proceed. This information facilitates the uniform analysis of hazards and development of other necessary ES&H documents, including utilization of applicable WSSs. By means of this analysis the authorizing organization ensures that the associated work hazards are identified, analyzed, and communicated to the staff involved in the activity. Additional guidance on analyzing the work hazards can be obtained from the area ES&H Team. Sec2.1.3 The RI should consult the ES&H Team members during that portion of the planning process that deals with ES&H issues to help establish cost-effective alternatives, eliminate unnecessary requirements, and allow everyone participating in the work activity to understand the ES&H issues.	Doc 2.2 Sec 1.5 Sec 2.1.3 Vol 1 Part 3, Sec .3 (IWS) & Sec 3.6 (Env Planning)

8	Planning	4.3.2 The organization shall establish and maintain a procedure **to identify applicable legal and other requirements**	Standards and Requirements: Contract 48 stands as the fundamental basis for Laboratory operations. It provides the legal foundation for all activities.... Work Smart Standards. Clause 5.5 of Contract 48 contains the language providing for WSS. These standards establish workplace safety controls and are an integral part of ISM. DOE, UC, and LLNL collaborated in a Necessary & Sufficient (N&S) process to tailor a WSS set for LLNL. ... Maintenance of WSS Set. The standards can be modified to meet the Laboratory's changing needs. A formal Change Control Process, using the N&S process, will provide an opportunity to keep the WSS set up-to-date (pg 5 ISMS DD) ... Flow Down of Requirements. LLNL operations are addressed through safety management processes and controls noted in the ES&H Manual. This and other institution-level documents include formal processes for applying requirements locally at the Facility and Activity levels. A key to the flow-down process is the formal incorporation of the WSS set into the ES&H Manual. (pg 6 ISMS DD)	ISMS DD pg 5-6
9	Planning	4.3.3 The organization shall **establish and maintain documented environmental objectives and targets at each relevant function and level within the organization**	Laboratory's safety goal is to continuously strive for a healthy, accident free, and environmentally sound workplace and community while providing the scientific and technical excellence needed to meet national missions. Appendix F Perf Meas 8.2 Achieve continual improvement in ISM - Assure consistent application of ISM across all organization levels and across all laboratory facilities. Appendix F 8.6 Maintain an Environmental Management Program consistent with DOE negotiated regulatory requirements, funding levels, and NNSA policy. (FY02 Waste Reduction & Recycling, Envir. Violations, Envir. Releases)	2.2 & 30.1
10	Planning	4.3.4.a The organization shall establish and maintain a program for achieving objectives and targets, **including designation of responsibility at each function and level of the organization**	The performance measures goals that are applicable to operations at LLNL as part of the UC contract with DOE are located online at … Appendix F Perf Meas 8.2 Achieve continual improvement in ISM - Assure consistent application of ISM across all organization levels and across all laboratory facilities (EO and 5400.1 links do not work)	30.1
11	Planning	4.3.4.b The organization shall establish and maintain a program for achieving objectives and targets, **including the means and time-frame by which they are to be achieved**	permit reviews, annual reports, SAER, NEPA, monitoring results, changes in requirements, IWS/SP, FSP, Facility self-assessments, new permit process, deftrack for deficiency issues; regulatory processes	41.1

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12	Imp & Ops	4.4.1.a Roles and responsibilities shall be defined, documented, and communicated, **including a specific management representative who has authority for the environmental management system**	The management chain is responsible for implementing the ES&H program. Responsibility is delegated from the Director to the Associate Directors (ADs), through each AD's management chain to each worker.	Throughout manual
13	Imp & Ops	4.4.1.b Roles and responsibilities shall be defined, documented, and communicated, **including a specific management representative who reports to top management on the performance of the environmental management system.**	The DDO advises the Director on ES&H policies and institutional issues, with input from the Safety and Environmental Protection (SEP) Directorate and the ES&H WG, and oversees the effectiveness of activities and programs to implement these policies. The Assurance Review Office (ARO) performs institutional level oversight of ES&H program implementation by the directorates. The Assurance Managers, who report to their AD, provide assurance of ISM implementation at the directorate level.	Vol 1, Part 2.0, Doc 2.1, Sec 3.0
14	Imp & Ops	4.4.2.a The organization shall identify training needs and require that personnel receive appropriate training, **including knowledge of environmental policy and the environmental management system**	This document defines the LLNL Training Program and is intended to guide job-related training This document (Doc 40.2) describes one subset of that program--environment, safety, and health (ES&H) education and training at LLNL.	Vol IV, Part 40 (Documents 40.1 & 40.2)
15	Imp & Ops	4.4.2.b The organization shall identify training needs and require that personnel receive appropriate training, **including understanding of environmental aspects of work and the importance of improved performance**	Training requirements originate in several different ways. Some requirements apply to particular categories of workers throughout LLNL. This training is usually required by laws, codes, and standards. Such Laboratory-wide requirements are identified in the LLNL Course Catalog as Institutional Training Requirements (ITRs). A directorate may specify a training requirement for categories of workers in their organization. These requirements are known as Organizational Training Requirements (OTRs). OTRs are usually specified in directorate management or training plans. In addition, there may be Local Training Requirements (LTRs) that apply only to a particular activity, work area, or type of work. These training requirements may be specified on an Integration Worksheet (IWS) or in an Operational Safety Plan (OSP). Training requirements for a particular facility are in a Facility Safety Plan (FSP).	Vol IV, Part 40 (Doc 40.2) Sec 3.2
16	Imp & Ops	4.4.2.c The organization shall identify training needs and require that personnel receive appropriate training, **including individual roles and responsibilities and emergency preparedness and response**	The policy of LLNL for Environment, Safety and Health is to ensure that all personnel have the training required to protect health and to perform their work in a competent and safe, and environmentally sound manner. The training standards will meet or exceed the requirements of DOE, regulatory agencies, and where appropriate, standards established by industry or professional organizations.	Vol 1, Doc 1.2, Sec 7.0. Also Vol IV, Part 40 (Doc 40.1) Sec 5

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17	Imp & Ops	4.4.2.d The organization shall identify training needs and require that personnel receive appropriate training, **including potential consequences of departure from specified operating procedures.**	The policy of LLNL for Environment, Safety and Health is to ensure that all personnel have the training required to protect health and to perform their work in a competent and safe, and environmentally sound manner. The training standards will meet or exceed the requirements of DOE, regulatory agencies, and where appropriate, standards established by industry or professional organizations. Also (Vol IV Sec 3.2): Applicable LTRs, OTRs, and ITRs should be identified and documented as part of work controls in the IWS process (see Document 2.2, "Managing ES&H For LLNL Work" in the ES&H Manual.	Vol 1, Doc 1.2, Sec 7.0. Also Vol IV, Doc 40.1 Sec 3.2
18	Imp & Ops	4.4.3.a The organization shall establish and maintain procedures **for internal communication regarding the environmental management system**	The [ES&H] Manual is to be used by first-line supervisors, work planners, management and staff, and others to integrate ES&H requirements into Laboratory work activities. It also serves as a reference to ES&H professionals in providing consistent ES&H guidance for Laboratory work.	Vol 1, Doc 1.1, Sec 2.0
19	Imp & Ops	4.4.3.b The organization shall establish and maintain procedures **for receiving, documenting, and responding to communication from external interested parties regarding environmental issues**	Procedures are in place for external communications - This is not part of the ES&H Manual	N/A
20	Imp & Ops	4.4.4.a The organization shall establish and maintain information **to describe the environmental management system**	The ISMS DD and ES&H Manual are the maintained information basis	N/A
21	Imp & Ops	4.4.4.b The organization shall establish and maintain information **to provide direction to related documentation**	The ISMS DD and ES&H Manual are the maintained information basis. Links are imbedded in the documents to related documentation	N/A
22	Imp & Ops	4.4.5.a The organization shall establish and maintain procedures for controlling documents to **ensure that they can be located.**	1.2 Environment, Safety, and Health - Integrated into Laboratory work are requirements for a healthy, accident-free, and environmentally sound workplace and community. The institutional requirements and major methods for this integration are described in the Laboratory's ISMS Description. The ISMS consists of two components: organizational structure and underlying principles, functions, and requirements. QA requirements pertaining to ES&H are implemented through the ISMS Description, Directorate ISMS Plans, and Part 41 (Quality Assurance and Configuration Management) of the ES&H Manual.	Vol IV, Part 41, Doc 41.1 Sec 1.2

23	Imp & Ops	4.4.5.b The organization shall establish and maintain procedures for controlling documents to **ensure that they are periodically reviewed, revised, and approved,**	IWSs shall be revised anytime there is a change of scope of the work authorized. This may include changes in the activity, identification of previously unknown hazards, changes in location, or significant staff changes. In the event that the RI is no longer able to exercise his or her roles and responsibilities (e.g., change of assignment or termination from the organization), the AI is responsible for appointing a replacement, or the work is to be stopped. In the event that the AI is no longer able to exercise his or her roles and responsibilities, the authorizing organization is responsible for appointing a replacement. Until a replacement AI is appointed, the next individual up on the management chain, described in the IWS, serves as AI. The authorizing organization is responsible for documenting all changes to the IWS, and ensuring that workers on the IWS are made aware of the changes.	Vol IV, Part 41 Doc 41.2 Also Vol 1 Doc 2.2 Sec 3.3.1
24	Imp & Ops	4.4.5.c The organization shall establish and maintain procedures for controlling documents to **ensure that current versions of the documents are available at all locations**	ES&H requirements and policies from external and internal sources that may be applicable to Laboratory work activities are reviewed for possible incorporation into the Manual. The Manual is revised on an on-going basis to ensure incorporation of requirements from the most current set of WSS and LLNL policies. Employees shall use the official on-line version of the Manual to ensure that they are following the latest requirements and policies. The LLNL Deputy Director for Operations officially approves the documents included in the ES&H Manual. ALSO (Vol IV ...) Defined maximum retrieval times and processes should be established to ensure documents and records are available when needed for the purpose required. Documents that reflect the facility's design or that are necessary for day-to-day operation may have shorter required retrieval times. Documents and records shall be accessible to the document or record owners and to the facility management and the CI owner (if different from the document owners). Special procedures and controls may be necessary to meet the needs of both parties.	Vol 1, Doc 1.1, Sec 4.0. Also: Vol IV, Part 41 Doc 41.2

25	Imp & Ops	4.4.5.d The organization shall establish and maintain procedures for controlling documents to **ensure that obsolete documents are promptly removed from use.**	The CM and QA Programs provide a systematic process for assuring the status of facility safety basis requirements, and maintaining the appropriate descriptive documentation. Also (Sec 4.3): Using a graded approach by CM level, a controlled document distribution list (when applicable) shall be established and maintained to identify the controlled documents and holders of up-to-date copies. Copies of new or revised documents shall be distributed to affected parties and (if applicable) in accordance with a controlled document distribution list. For CM Level 1 documents (i.e., documents involving controls for the most significant hazards), acknowledgement of receipt is appropriate. Recipients should follow procedures for updating their copy of the document. Such procedures may include discarding any obsolete pages or copies of documents, or returning the obsolete documents to the document controller.	Vol IV, Doc 41.2, Sec 1.0 and Sec 4.3
26	Imp & Ops	4.4.5.e The organization shall establish and maintain procedures for controlling documents to **ensure any obsolete documents retained for legal or other reasons are suitably identified**	Using a graded approach by CM level, a controlled document distribution list (when applicable) shall be established and maintained to identify the controlled documents and holders of up-to-date copies. Copies of new or revised documents shall be distributed to affected parties and (if applicable) in accordance with a controlled document distribution list. For CM Level 1 documents (i.e., documents involving controls for the most significant hazards), acknowledgement of receipt is appropriate. Recipients should follow procedures for updating their copy of the document. Such procedures may include discarding any obsolete pages or copies of documents, or returning the obsolete documents to the document controller.	Vol IV, Doc 41.2 Sec 4.3

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27	Imp & Ops	4.4.6.a The organization shall identify operations and activities associated with significant aspects and **shall establish and maintain documented procedures**	An analysis of the hazards is performed for each activity prior to the start of work..., or when the scope of the work changes. A basic step in this process is the determination of the appropriate Work Authorization Level (WAL)....The controlling documentation for each Facility Authorization Level (FAL) is identified, as well as the necessary approvals and type of prestart review required. Appendix C thus facilitates uniform analysis of hazards and development of other necessary ES&H documents, including utilization of applicable WSSs. By means of this analysis the authorizing organization ensures that the associated facility hazards are identified, analyzed, and communicated to the staff involved in the activity.... Section 1.3 describes LLNL's approach to planning, controlling, and performing the work. Because the controls for an activity depend on both the types and severity of the hazards, it is important to re-analyze the activity whenever a new hazard is introduced, when changes may decrease the effectiveness of identified controls, or when changes may impact nearby activities....	Vol 1, Part 3, Sec 3.3 Also Vol 1, Doc 2.2, Sec. 2.4
28	Imp & Ops	4.4.6.b The organization shall identify operations and activities associated with significant aspects and **shall stipulate operating criteria in the procedures**	Operational work procedures shall be required when failure to correctly perform a specific sequence of steps for an activity could result in unacceptable consequences to the environment, safety, and health (ES&H). **Also:** ISM Principle 5 requires that safety standards and requirements shall be identified and followed. LLNL has selected a set of Work Smart Standards (WSSs) that are necessary and sufficient to protect people and the environment from hazards associated with its work activities. These standards are appended to the UC Contract. The controls from the WSS are either contained in or referenced in the Laboratory's ES&H Manual. AIs and RIs must work with their ES&H Team and SMEs as needed to ensure that all applicable controls are identified and appropriately tailored to the work activity.	Vol 1, Doc 3.4, Sec 1. **Also:** Doc 3.3 **Also** Vol 1, Doc 2.2, Sec. 2.5

29	Imp & Ops	4.4.6.c The organization shall identify operations and activities associated with significant aspects and **shall establish and maintain related procedures and requirements for suppliers and contractors**	LLNL has a Procured Services Environment, Safety, and Health (ES&H) Program, described in this document, to manage subcontractors that provide construction services, goods to be installed or set up, and industrial services such as equipment installation, repair, calibration, testing, road paving, and tree removal. This document describes how LLNL employees administer and implement the program to promote the prevention of injury or illness to subcontractor employees, protect Laboratory employees and resources, and prevent damage to the environment when subcontractors work at the Laboratory or at Laboratory-managed facilities. This document provides an overview of what subcontractors need to do to comply with the program; .... Also (Vol IV, Doc 42.1) This document contains requirements and guidance for LLNL project planners and authorizing organizations in managing the facility design and construction process, as well as implementing the first three functions of ISM	Vol 1, Doc 2.5 (Procured Services), Sec 1.0 Also: Vol IV, Part 42, Doc 42.1 (Mgmt of Fac Design & Construction) Sec 3.0 & 4.0 (esp 4.3)
30	Imp & Ops	4.4.7 The organization shall establish and maintain **procedures for accidents and emergency situations**	The Laboratory uses an emergency management system (known as the Incident Command System) that is capable of responding to and mitigating the consequences resulting from operational emergencies. This document describes that system and provides emergency planning procedures for operational emergencies that occur on LLNL property and those that take place offsite but have a potential impact on LLNL. The LLNL Emergency Plan (UCRL-MA-11331) provides additional information. Also (doc 22.2) The requirements and procedures for environmental emergency planning, preparedness, response, and reporting for operations at LLNL are presented in the following sections. "Environmental Emergency Planning" (2.0) and" Environmental Emergency Response" (3.0). Additionally, see Document 35.1, "Product Storage/Hazardous Materials," in the Environmental, Safety, and Health (ES&H) Manual. This document is in Volume II of the ES&H Manual, which deals with emergencies, earthquakes, and fire.	Vol 2, Doc. 22.1, (Sec 1.0) ALSO Vol 2, Doc 22.2 (Sec 1.0)
31	Check/Correct	4.5.1 The organization shall establish and maintain documented procedures to monitor and measure the key characteristics of its operations	Operational work procedures shall be required when failure to correctly perform a specific sequence of steps for an activity could result in unacceptable consequences to the environment, safety, and health (ES&H).	Vol 1 Doc 3.4, (Prep of work procedures) Sec 1.0

32	Check/Correct	4.5.2 The organization shall establish and maintain procedures for defining responsibility and authority for investigating and mitigating nonconformance	LLNL maintains a Deficiency Tracking System (DefTrack) which is to be used by all directorates to record and track the status of environmental, safety, and health (ES&H) deficiencies. Also (Vol IV) The Laboratory's QA Program is implemented through DQAPs. Each directorate shall develop, approve, implement, and maintain a written DQAP covering its activities at the working level. The DQAP shall be consistent with the Laboratory's ISMS and QA Program, and any additional sponsor requirements, as appropriate. The DQAP shall describe the directorate QA responsibilities and implementation system and indicate under what circumstances ALQAPs or equivalent instructions, procedures, or plans are required.	Vol 1 Doc 4.2 (Deficiencies). Doc 4.3 (Occurrence Reporting). Also Vol IV, Doc 41.1
33	Check/Correct	4.5.3 The organization shall establish and maintain procedures for the identification, maintenance, and disposition of environmental records	The Laboratory's QA Program is implemented through DQAPs. Each directorate shall develop, approve, implement, and maintain a written DQAP covering its activities at the working level. The DQAP shall be consistent with the Laboratory's ISMS and QA Program, and any additional sponsor requirements, as appropriate. The DQAP shall describe the directorate QA responsibilities and implementation system and indicate under what circumstances ALQAPs or equivalent instructions, procedures, or plans are required. (Sec 4.2) For all CM levels, record retention times shall be established to meet the needs of facility or program management and to meet currently established retention schedules, which are available at the following Internet address:	Vol 1 Part 4, also Vol IV, Doc 41.1, Doc 41.2 Sec 4.2

34	Check/Correct	4.5.4.a The organization shall establish and maintain programs/ procedures for periodic environmental management system audits.	... conduct self-assessments of ES&H and QA within each directorate. The ... program integrates the requirements for management assessments under LLNL's QA Plan with the Laboratory's ISMS requirement for self-assessment, in order to provide feedback and achieve continuous improvement. Also ... Develops an ES&H Self-Assessment Plan describing the methods and frequency of ES&H self-assessments for its facilities and operations based on requirements in the Laboratory's ES&H Manual. Each directorate provides its Self-Assessment Plan and Annual Self-Assessment Report to the Assurance Review Office (ARO) for independent assessment and oversight. Also: The Laboratory's QA Program is implemented through DQAPs. Each directorate shall develop, approve, implement, and maintain a written DQAP covering its activities at the working level. The DQAP shall be consistent with the Laboratory's ISMS and QA Program, and any additional sponsor requirements,.... The DQAP shall describe the directorate QA responsibilities and implementation system and indicate under what circumstances ALQAPs or equivalent instructions, procedures, or plans are required.	Vol 1 Part 4. also Vol IV, Doc 41.1
35	Check/Correct	4.5.4.b The organization shall provide information on the results of audits to management	The Laboratory's QA Program is implemented through DQAPs. Each directorate shall develop, approve, implement, and maintain a written DQAP covering its activities at the working level. The DQAP shall be consistent with the Laboratory's ISMS and QA Program, and any additional sponsor requirements, as appropriate. The DQAP shall describe the directorate QA responsibilities and implementation system and indicate under what circumstances ALQAPs or equivalent instructions, procedures, or plans are required.	Vol 1 Part 4. also Vol IV, Doc 41.1
36	Mgmt Review	4.6 The organization's top management shall, at intervals, review the environmental management system	Develops an ES&H Self-Assessment Plan describing the methods and frequency of ES&H self-assessments for its facilities and operations based on requirements in the Laboratory's ES&H Manual. Each directorate provides its Self-Assessment Plan and Annual Self-Assessment Report to the Assurance Review Office (ARO) for independent assessment and oversight.	Vol 1 Part 4. also Vol IV, Doc 41.1

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Attachment 3. Crosswalk of DOE Order 450.1 Contractor Requirements to LLNL ES&H Manual

#	DOE Order 450.1 CRD Requirement	LLNL ES&H Manual Element	Associated ISO 14001 Element(s)
1	Responsible for (1) compliance with the requirements of the CRD and	**POSSIBLE ACTION:** Include statement in ISMS DD (ES&H Manual) that the Laboratory is compliant with 450.1, if 450.1 is adopted in the WSS.	4.4.1a
2	Responsible for (2) flowing down the requirements of the CRD to subcontracts at any tier to the extent necessary to ensure the contractors' compliance with the requirements.	Vol 1, Doc 2.5 (Procured Services), Sec 1.0 Also: Vol IV, Part 42, Doc 42.1 (Mgmt of Fac Design & Construction) Sec 3.0 & 4.0 (esp. 4.3)	4.4.6c
3	EMS requirements must be addressed in the contractor's ISMS which must be submitted for DOE review and approval	**POSSIBLE ACTION:** Include statement in ISMS and/or ES&H Manual that EMS is fully integrated into the ISMS, if 450.1 is adopted in the WSS.	4.2c; 4.3.2
4	Provide for the systematic planning, integrated execution, and evaluation of programs for— public health and environmental protection,	Entire ES&H Manual and ISMS DD Implementation Plans	Planning =4.3; Execute = 4.4; Evaluate = 4.5
5	Provide for the systematic planning, integrated execution, and evaluation of programs for—pollution prevention (P2), and	Document 30.1 Waste Minimization and Pollution Prevention	Planning =4.3; Execute = 4.4; Evaluate = 4.5
6	Provide for the systematic planning, integrated execution, and evaluation of programs for—compliance with applicable environmental protection requirements.	Volume 3 describes the processes. (WSS, IWS, FSPs, NEPA/CEQA, Permit reporting). Also Document 42.1 (Volume 4) contains a process description for design & construction activities and references Volume 3 of the ES&H Manual).	Planning =4.3; Execute = 4.4; Evaluate = 4.5
7	Include policies, procedures, and training to identify activities with significant environmental impacts, to manage, control, and mitigate the impacts of these activities, and to assess performance and implement corrective actions where needed.	Doc 2.2 Sec 1.5 Sec 2.1.3 Vol 1 Part 3, Sec .3 (IWS) & Sec 3.6 (Env Planning). Documents 40.1 and 40.2 describe the policy and training procedures.	Policy=4.2d,e; Proced.=4.4.6&4.5; Train=4.4.2
8	Include measurable environmental goals, objectives, and targets that are reviewed annually and updated when appropriate.	One goal (the safety goal) is identified in the Manual. CEMP has goals and annual review of water and energy consumption. The SEP Annual Self-Assessment demonstrates annual review of status however, specific targets were not consistently identified. Compliance metrics appear to be the primary targets. There are no plans to replace Appendix F measures process.	Identify=4.3.3; Monitor=4.5.1; Audit=4.5.4a
9	Consider the following for inclusion as applicable: conformity of DOE proposed actions with State Implementation Plans to attain and maintain national ambient air quality standards,	Documents 31.1 and 31.2 describe air compliance requirements and permitting process	specific aspect/requirement id=4.2c; 4.4.4a plus 4.3.4a,b; 4.4.6a,b; 4.5.1 if applicable

10	Consider the following for inclusion as applicable: implementation of a watershed approach for surface water protection,	Document 32.1 describes the management of discharges to land and water. Additional processes are identified in Documents 32.2, 32.3, 32.4, 33.1, 34.1, 35.1, and 13.3. The approach is not clearly a watershed approach.	specific aspect/requirement id=4.2c; 4.4.4a plus 4.3.4a,b; 4.4.6a,b; 4.5.1 if applicable
11	Consider the following for inclusion as applicable: implementation of a site-wide approach for groundwater protection,	Document 34.1 addresses remediation from past practices. Documents 32.1 etc. (see above) for surface water discharges clearly is intended to also protect groundwater resources (e.g., Section 3 (controls) identify groundwater as a resource to be protected).	specific aspect/requirement id=4.2c; 4.4.4a plus 4.3.4a,b; 4.4.6a,b; 4.5.1 if applicable
12	Consider the following for inclusion as applicable: protection of other natural resources including biota,	State and Federal protected species are the primary biota considered (see Document 33.2). Also wetland habitat is protected (see Document 33.1).	specific aspect/requirement id=4.2c; 4.4.4a plus 4.3.4a,b; 4.4.6a,b; 4.5.1 if applicable
13	Consider the following for inclusion as applicable: protection of site resources from wildland and operational fires, and	Based on interviews, there is a fire management plan for Site 300. It is not part of the ES&H Manual.	specific aspect/requirement id=4.2c; 4.4.4a plus 4.3.4a,b; 4.4.6a,b; 4.5.1 if applicable
14	Consider the following for inclusion as applicable: protection of cultural resources.	Document 33.4 describes the cultural resource protection process. The document scope notes that historic buildings may be present. However, the document does not describe a process for historic buildings, only for excavations and ground disturbing activities.	specific aspect/requirement id=4.2c; 4.4.4a plus 4.3.4a,b; 4.4.6a,b; 4.5.1 if applicable
15	promote the long-term stewardship of a site's natural and cultural resources throughout its operational, closure, and post-closure life cycle;	The processes described are focused on activities not on long-term stewardship. Environmental Planning (Document 3.6 of Volume 1) does not appear to include long-term stewardship beyond the protected species and wetland resources.	specific aspect/requirement 4.2a; 4.4.4a
16	reduce or eliminate the generation of waste, the release of pollutants to the environment, and the use of Class I ozone-depleting substances (ODS) through source reduction, re-use, segregation, and recycling, and by procuring recycled content materials and environmentally preferable products and services;	Document 30.1 describes waste reduction and pollution prevention use of environmentally preferred products, etc. ODS replacement is not part of ES&H Manual (part of plant engineering activities)	specific aspect/requirement
17	ensure the early identification of, and appropriate response to, potential adverse environmental impacts associated with DOE operations, including as appropriate, preoperational characterization and assessment; and effluent and surveillance monitoring.	Volume 3 describes the monitoring and reporting requirements for compliance. In addition, the Site Annual Environmental Surveillance Report assists in meeting this element.	4.5.1

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18	Update approved ISMS descriptions as necessary to include EMS requirements of this CRD. Report to DOE operations/ field/site office managers within 12 months after insertion of this CRD into the contract on the status of implementation of appropriate management system elements of this CRD.	**POSSIBLE ACTION:** Include statement in ISMS DD (ES&H Manual) that the Laboratory is compliant with 450.1 if it is adopted within the WSS.	4.2a, 4.6
	Assist the Department in meeting its requirements and in its efforts to obtain, as appropriate, local community advice relevant to aspects of		4.2c; 4.4.4a
19	Executive Order 13101, "Greening the Government Through Waste Prevention, Recycling and Federal Acquisition	Document 30.1 describes waste prevention and recycling.	4.2c; 4.4.4a
20	" Executive Order 13221, "Energy Efficiency Standby Power Devices;"	Not in ES&H Manual; Part of CEMP. Also, based on interviews Laboratory has processes to meet this order	4.2c; 4.4.4a
21	Executive Order 13123, "Greening the Government Through Efficient Energy Management	Not in ES&H Manual; Part of CEMP. Also, based on interviews Laboratory has processes to meet this order	4.2c; 4.4.4a
22	" Executive Order 13148, "Greening the Government Through Leadership in Environmental Management		4.2c; 4.4.4a
23	" and Executive Order 13149, "Greening the Government Through Federal Fleet and Transportation Efficiency."	Not in ES&H Manual; may be part of fleet operations	4.2c; 4.4.4a
24	Assist the Department in meeting its requirements under Executive Order 13148 by ensuring, where appropriate, implementation of centralized procurement and distribution programs (e.g., pharmacy) for purchasing, tracking, distributing, and managing materials with toxic or hazardous content at facilities under their purview.	Not in ES&H Manual. Interviews with procurement staff indicate process is in place and implemented.	4.2c; 4.4.4a
25	Incorporate, where appropriate, environmentally and economically beneficial landscape practices into all new landscaping programs, policies, and practices for facilities. [See requirements placed on Federal agencies in Executive Order 13148, "Greening the Government Through Leadership in Environmental Management."]	Not in ES&H Manual. Interviews indicate this is part of Plant Engineering.	4.2c; 4.4.4a
26	Monitor progress toward meeting the P2 requirements of paragraph 2c above, and make such information available annually to the DOE operations/field/site office.	Document 30.1 describes pollution prevention process including reporting requirements	4.5.1

27	Consider P2 in the specification and acquisition of supplies to cost effectively maximize procurement of environmentally preferable products. As appropriate, all acquisitions must be coordinated with the DOE operations/field/site office "Green Acquisition Advocate." [See Acquisition Letter AL-2000-03, dated 05/16/00]	Not part of ES&H Manual. Interviews indicate that this has been started and discussion are occurring to more fully implement.	specific aspect/requirement 4.5.1
28	9. Conduct operational assessments, such as Pollution Prevention Opportunity Assessments, of site operations to identify opportunities for source reduction, material segregation, recycle/reuse, or other P2 projects. Based on the results of these assessments, implement cost-effective P2 projects, using life-cycle assessment concepts and practices in determining return-on-investment.	Document 30.1 describes pollution prevention process including general statements on opportunity assessments. Interviews substantial these are done (consistency and implementation are not known)	4.5.4a
29	10. Conduct environmental monitoring, as appropriate, to support the site's ISMSs, to detect and characterize releases from DOE activities; assess impacts; estimate the dispersal patterns in the environment; characterize the pathways of exposure to members of the public; and characterize the exposures and doses to individuals, and to the population; and to evaluate the potential impacts to the biota in the vicinity of the DOE activity.	Volume 3 describes the monitoring and reporting requirements for compliance. In addition, the Site Annual Environmental Surveillance Report assists in meeting this element.	4.5.1
	11. Ensure the analytical work supporting environmental monitoring is implemented using—		4.5.1
30	(a) a consistent system for collecting, assessing, and documenting environmental data of known and documented quality;	Volume 3 describes the monitoring and reporting requirements for compliance. In addition, the Site Annual Environmental Surveillance Report assists in meeting this element. Document 41.1 (Volume 4) describes QA processes and Document 41.2 (Volume 4) describes configuration management. Interviews indicate that data quality is considered in sampling and analysis activities.	4.5.1
31	(b) a validated and consistent approach for sampling and analysis of radionuclide samples to ensure laboratory data meets program-specific needs and requirements within the framework of a performance-based approach for analytical laboratory work;	Volume 3 describes the monitoring and reporting requirements for compliance. In addition, the Site Annual Environmental Surveillance Report assists in meeting this element. Document 41.1 (Volume 4) describes QA processes and Document 41.2 (Volume 4) describes configuration management. Interviews indicate that data quality is considered in sampling and analysis activities.	4.5.1

32	(c) an integrated sampling approach to avoid duplicative data collection.	Part of QA (Document 41.1). However not explicit, part of sampling orgainzations technical procedures. Interviews indicate this is considered.	4.5.1
	12. Develop and implement a program and procedures to maximize the use of safe alternatives to ODS whereby—		specific aspect/requirement 4.5.1
33	a) the procurement of Class I ODS for all nonexcepted uses is discontinued by December 31, 2010 [See Executive Order 13148], and	Document 30.1 describes waste reduction and pollution prevention use of environmentally preferred products, etc. ODS replacement is not part of ES&H Manual (part of plant engineering activities)	specific aspect/requirement 4.5.1
34	b) disposal of ODS removed or reclaimed from equipment (including disposal as part of a contract, trade, or donation) is coordinated within DOE and with DoD, and for situations in which the recovered ODS is a critical requirement for DoD missions, the facility transfers the ODS to DoD.	Document 30.1 describes waste reduction and pollution prevention use of environmentally preferred products, etc. ODS replacement is not part of ES&H Manual (part of plant engineering activities)	specific aspect/requirement 4.5.1
35	13. Assist the Department with its requirement under Executive Order 13148 by meeting reporting and planning requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA or Title III of Superfund Amendments and Reauthorization Act of 1986), 42 U.S.C. 11001, and the Pollution Prevention Act of 1990, 42 U.S.C. 13101.	Volume 2 of the ES&H Manual. Interviews indicate that process document and implemented.	4.4.7